



DRAFT ENVIRONMENTAL ASSESSMENT

**CHANGING THE SILVER MILITARY OPERATIONS AREA
FOR NELLIS AIR FORCE BASE, NEVADA**

January 2005



Draft Environmental Assessment

Changing the Silver Military Operations Area
For Nellis Air Force Base, Nevada

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DEPARTMENT OF DEFENSE
UNITED STATES AIR FORCE
FINDING OF NO SIGNIFICAN IMPACT
FOR CHANGING THE SILVER MILITARY OPERATIONS AREA
NELLIS AIR FORCE BASE, NEVADA

Pursuant to the Council on Environmental Quality (CEQ) Regulations (40 CFR, Parts 1500-1508) implementing procedural provisions of the National Environmental Policy Act (NEPA) of 1969 (42 USC §4321, *et seq.*), the United States Air Force at Nellis AFB has prepared an Environmental Assessment (EA) to explore and examine the potential environmental impacts for changing the Silver Military Operations Area (MOA). Based on the findings and conclusions of the EA, an Environmental Impact Statement (EIS) is not being prepared.

Proposed Action. The United States Air Force at Nellis AFB, Nevada proposes to modify its existing special use airspace (the Silver MOA). The Proposed Action proposes to change the Silver MOA in size and altitude to enhance realistic combat training at the National Training Center (NTC), Fort Irwin, California and improve aviation safety. The Silver MOA would be reconfigured reducing its size in the southeast and increasing its size in the southwest. These changes would result in a net reduction of special use airspace of approximately 215 square miles. The airspace no longer needed would be returned to the National Airspace System (NAS). Once the new special use airspace boundaries were reconfigured, the new airspace would be divided into two parts: Silver North MOA and Silver South MOA. This alternative proposes to increase the altitude ceiling of the Silver North MOA to 9,000 ft above mean sea level (MSL) and establish the altitude ceiling of the Silver South MOA at 7,000 ft MSL—both MOAs would have an altitude floor of 200 ft above ground level (AGL).

Alternative 1. Alternative 1 proposes to change the size and altitude ceiling of the current Silver MOA. The Silver MOA would increase by approximately 110 square miles. Under this alternative, no special use airspace would be returned to the NAS. The new Silver MOA would also be increased in altitude to 10,000 ft MSL—the MOA would retain its altitude floor of 200 ft AGL.

No Action Alternative. Under the No Action Alternative, no airspace changes would occur. The Silver MOA would retain its current boundaries and altitudes (i.e., 200 ft AGL floor and 7,000 ft MSL ceiling).

Environmental Recourses. Environmental resource areas typically explored in environmental assessments include cultural and paleontology resources, earth resources, hazardous materials/waste and solid waste, land uses, recreational and visual resources, ground transportation, and hydrology and water resources. This proposed action proposes to change the airspace ceiling and boundaries only and does not propose to change the numbers and/or types of ground equipment, or exercise mission configurations. Cultural and paleontological resources were not explored because this action would not have any ground disturbing activities; earth resources were not explored because there would be no ground disturbing or construction activities; hazardous materials/waste and solid waste were not explored because no hazardous materials would be used or hazardous/solid wastes produced as a result of this project; land uses were not explored because this is not a land acquisition action; recreational and visual resources would remain unchanged as a result of this action; ground transportation was not explored because this project does not propose any new, or changes to existing,

ground transportation resources; and hydrology and water resources were not explored because no water resources would be used for this project.

The environmental resources examined in the EA were airspace, air quality, biological resources, environmental justice, noise, safety, and socioeconomics. No significant impacts to the NAS would occur. This proposal would not include any ground disturbing activities; therefore, no additional changes to air emissions and noise would occur. Likewise, no additional negative impacts to biological resources, environmental justice, or socioeconomics would be experienced. After a thorough evaluation of the above-mentioned environmental issues, the USAF at Nellis AFB, Nevada has concluded that no significant environmental impacts would occur as a result of implementing the Proposed Action.

Native American Concerns. Air Force regulation requires that Nellis AFB consider and analyze the effects of airspace changes on Native American undertakings on historic properties. Air Force representatives consulted with the Nellis AFB Native American Program Coordinator on 21 December 2004 to identify and evaluate cultural resource issues. It was determined that the changes to the airspace designations proposed in the Proposed Action and Alternative 1 would not alter the status quo. No further consultation is required.

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(date)

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Acronyms and Abbreviations

°F	Degrees Fahrenheit
µg/m ³	Micrograms per Cubic Meter
ACC	Air Combat Command
AFB	Air Force Base
AFFTC	Air Force Flight Test Center
AFOSH	Air Force Occupational Health and Safety
AGL	Above Ground Level
AR	Army Regulation
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
BASH	Bird-Aircraft Strike Hazard
C ²	Command and Control
CA	California
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resource Board
CAS	Close Air Support
CCB	Complex Control Board
CCF	Central Coordinating Facility
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CFA	Controlled Firing Areas
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CY	Calendar Year
dB	Decibels
DOD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAAO	Federal Aviation Administration Order
FAR	Federal Aviation Regulations
FICUN	Federal Interagency Committee on Urban Noise
FIP	Federal Implementation Plan
FL	Flight Level
FONSI	Finding of No Significant Impacts
ft	Feet
FWW	Fighter Weapons Wing
FY	Fiscal Year
G3	Directorate of Plans, Training, and Mobilization
H ₂ S	Hydrogen Sulfide
hrs	Hours
I-15	Interstate 15
ICUZ	Installation Compatible use Zone
IFR	Instrument Flight Rules

IICEP	Intergovernmental and Interagency Coordination for Environmental Planning
KIAS	Knots Indicated Air Speed
L	Sound Level
Lat	Latitude
Ldn	Day-Night Sound Average Level
Lmax	Maximum Sound Level
Long	Longitude
MCAS	Marine Corps Air Station
MDAQMD	Mojave Desert Air Quality Management District
MEA	Minimum Enroute Altitude
MOA	Military Operations Area
MOCA	Minimum Obstruction Clearance Altitude
MR_NMAP	MOA Range NoiseMAP
MSL	Mean Sea Level
MTR	Military Training Route
NAAQS	National Ambient Air Quality Standards
NAS	National Airspace System
NEPA	National Environmental Policy Act
NM	Nautical Mile
NO ₂	Nitrogen Dioxide
NOI	Notice of Intent
NOTAM	Notice to Airman
NO _x	Nitrogen Oxides
NTC	National Training Center
NTSB	National Transportation Safety Board
NTTR	Nevada Test and Training Range
O ₃	Ozone
OSS	Operational Support Squadron
Pb	Lead
PL	Public Law
PM ₁₀	Particulate Matter with an Aerodynamic Diameter of Less than 10 Microns
ppm	Parts Per Million
ROC	Resource Operations Center
ROI	Region of Influence
SEL	Sound Exposure Level
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
SO _x	Sulfur Oxides
TRACON	Terminal Radar Approach Control
US	United States
USAF	United States Air Force
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USMC	United States Marine Corps
USN	United States Navy
VFR	Visual Flight Rules
VOC	Volatile Organic Compounds
VOR	VHF (Very High Frequency) Omni-directional Range (radio)
VORTAC	VOR and TACAN Radio Beacons

Executive Summary

Introduction

The United States Air Force (USAF) at Nellis Air Force Base (AFB), Nevada has produced this Environmental Assessment (EA) to define, evaluate, and assess the potential environmental impacts of increasing the altitude and changing boundaries of the Silver Military Operations Area (MOA), and to determine if an Environmental Impact Statement (EIS) is required.

Purpose and Need for the Proposed Action

The purpose of the proposed action is to reconfigure the Silver MOA to better support U.S. and allied air and ground forces during advanced combat training conducted at the National Training Center (NTC). Air Warrior aircrews train at the NTC to develop and evaluate tactics and optimize the combat capability of airborne weapons systems and tactics, to include close air support (CAS) and urban warfare tactics.

The proposed changes are needed because the current airspace altitude ceiling is too low to realistically execute assigned combat training missions. The current airspace configuration hampers realistic, high fidelity training required for aircrews to practice in the full spectrum of offensive and defensive weapons employment, tactics, and countermeasures. Likewise, aircrews simulating adversaries must alter their efforts to replicate enemy tactics, weapons employment, and countermeasures. Additionally, this airspace action would help eliminate airspace spill-outs—unauthorized crossing of the horizontal and/or vertical boundaries of the special use airspace into the National Airspace System (NAS)—by aircraft transitioning between the Silver and Barstow MOAs (the Silver and Barstow MOAs are connected at one geographic spot at approximately 35° 07.30 N, 116° 34.00 W). This would improve flight safety for all nearby airspace users.

Description of the Proposed Action and Alternatives

Proposed Action

The USAF at Nellis AFB, Nevada proposes to modify its existing special use airspace (the Silver MOA). The Proposed Action proposes to change the Silver MOA in size and altitude to enhance realistic combat training at the NTC, Fort Irwin, California, and improve aviation safety. As depicted in Figure 2-1, the Silver MOA would be reconfigured reducing its size in the southeast and increasing its size in the southwest. These changes would result in a net reduction of special use airspace of approximately 215 square miles. The airspace no longer needed would be returned to the NAS. Once the new special use airspace boundaries were reconfigured, the new airspace would be divided into two parts: Silver North MOA and Silver South MOA. This alternative proposes to increase the altitude ceiling of the Silver North MOA to 9,000 ft MSL and establish the altitude ceiling of the Silver South MOA at 7,000 ft MSL—both MOAs would have an altitude floor of 200 ft AGL.

NOTE: Any changes to special use airspace must be made by the Federal Aviation Administration (FAA). The FAA is a cooperating agency to this action (FAA 2004d; Appendix A).

Alternative 1

Alternative 1 proposes to change the size and altitude ceiling of the current Silver MOA. As depicted in Figure 2-2, the Silver MOA would increase by approximately 110 square miles to the southwest. Under this alternative, no special use airspace would be returned to the NAS. The new Silver MOA would be increased in altitude to 10,000 ft MSL—the MOA would retain its altitude floor of 200 ft AGL.

No Action Alternative

Under the No Action Alternative, no airspace changes would occur. As depicted in Figure 2-3, the Silver MOA would retain its current boundaries and altitudes (200 ft AGL floor and 7,000 ft MSL ceiling).

Environmental Issues

Environmental resource areas typically explored in environmental assessments often include cultural and paleontology resources, earth resources, hazardous materials/waste and solid waste, land uses, recreational and visual resources, ground transportation, and hydrology and water resources. The actions proposed in this proposal, are to change the airspace ceiling and boundaries only and do not propose to change the numbers and/or types of ground equipment, or exercise mission configurations. Cultural and paleontological resources were not explored because this action would have no any ground disturbing activities; earth resources were not explored because there would be no ground disturbing or construction activities; hazardous materials/waste and solid waste were not explored because no hazardous materials would be used or hazardous/solid wastes produced as a result of this project; land uses were not explored because this is not a land acquisition action; recreational and visual resources would remain unchanged as a result of this action; ground transportation was not explored because this project does not propose any new, or changes to existing, ground transportation resources; and hydrology and water resources were not explored because no water resources would be used for this project.

The following environmental resources were considered relevant to the proposed action; they are defined in Chapter 3 and analyzed for potential impacts in Chapter 4.

- | | |
|-------------------------|------------------|
| ❖ Air Quality | ❖ Noise |
| ❖ Airspace | ❖ Safety |
| ❖ Biological Resources | ❖ Socioeconomics |
| ❖ Environmental justice | |

Native American Concerns

Air Force regulation (USAF 2004) requires that Nellis AFB consider and analyze the effects of airspace changes on Native American undertakings on historic properties. Air Force representatives consulted with the Coordinator of the Nellis AFB Native American Program on 21 December 2004 to identify and evaluate cultural resource issues (the Coordinator was elected by tribal representatives from 17 tribes with ancestral ties to the

Nevada Test and Training Range, and other lands within a 250-mile radius of Arizona, California, Nevada, and Utah). It was determined that the changes to the airspace designations proposed in the Proposed Action and Alternative 1 would not alter the status quo. No further consultation is required (Myhrer 2004).

Conclusions

After a thorough evaluation of the above-mentioned environmental issues, the USAF at Nellis AFB, Nevada has concluded that no significant environmental impacts would occur as a result of implementing the Proposed Action and an EIS is not necessary. The following table shows a comparison of the Proposed Action, Alternative 1, and the No Action Alternative.

Table ES-1: Summary of Alternatives

PROPOSED ACTION	ALTERNATIVE 1	NO ACTION ALTERNATIVE
AIR QUALITY		
The emissions that are estimated to occur below the mixing altitude within the study area each year are well below <i>de minimus</i> levels; therefore, are less than significant.	Same as the Proposed Action.	Under the No Action Alternative, no changes would occur to existing air quality and therefore, there would be no additional adverse impacts on air quality as a result of selecting this alternative
AIRSPACE		
<ul style="list-style-type: none"> • The impacts that the Proposed Action would impose on NTC/Air Warrior operations are considered positive. • The impacts that the Proposed Action would impose on non-participating military operations are considered to be less than significant. • The impacts that the Proposed Action would impose on VFR commercial and general aviation traffic are considered to be less than significant. • The impacts that this alternative would impose on IFR commercial and/or general aviation traffic and the NAS are considered less than significant. 	<ul style="list-style-type: none"> • The impacts that Alternative 1 would impose on NTC/Air Warrior operations are considered positive. • The impacts that Alternative 1 would impose on non-participating military operations are considered less than significant. • The impacts that Alternative 1 would impose on VFR commercial and/or general aviation traffic, and the NAS may be considered significant; if this alternative were selected, the USAF and FAA would need to develop mitigation measures to reduce the impacts. • The impacts that this alternative would impose on IFR commercial and/or general aviation traffic and the NAS are considered less than significant. 	<p>Under the No Action Alternative, the operational constraints that currently exist would continue. Air Warrior aircrews would continue to operate under unrealistic altitude ceiling constraints that do not allow them execute realistic, high fidelity combat training. The current airspace configuration would continue to hamper aircrews attempting to practice in the full spectrum of offensive and defensive weapons employment, tactics, and countermeasures. Likewise, aircrews that are tasked simulate an adversary's tactics, weapons employment, and countermeasures would continue to alter their efforts due to the current airspace constraints. Additionally, the No Action Alternative would continue to perpetuate airspace spill-outs when aircraft transition between the Silver and Barstow MOAs. Under the No Action Alternative, there would be no change to current conditions involving non-participating military operations. Under the No Action Alternative, there would be no change to current conditions involving VFR/IFR commercial and/or general aviation operations</p>

Table ES-1: Summary of Alternatives (Con't)

PROPOSED ACTION	ALTERNATIVE 1	NO ACTION ALTERNATIVE
BIOLOGICAL		
<ul style="list-style-type: none"> • The potential impacts to federal and state listed threatened, endangered, and sensitive species were found to have no additional environmental effects. • The potential impacts to migratory birds and/or other raptors were found to have no additional environmental effects. 	Same as Proposed Action.	Under the No Action Alternative, no changes to the current airspace configuration would occur, and therefore there would be no additional impacts to threatened, endangered, and sensitive species, and/or migratory birds and raptors.
ENVIRONMENTAL JUSTICE		
The Proposed Action involves changes to the airspace above 7,000 ft MSL—there are no changes proposed to the airspace over populated areas or ground disturbing activities. Furthermore, the new airspace boundaries proposed by the Proposed Action exclude the town of Baker; therefore, there would be no new adverse impacts to either minority or low-income populations, and children.	Alternative 1 involves changes to the airspace above 7,000 ft MSL—there are no changes proposed to the airspace over populated areas or ground disturbing activities; therefore, there would be no new adverse impacts to either minority or low-income populations, and children.	Under the No Action Alternative, no changes would occur to existing airspace and therefore, there would be no new adverse impacts to minority or low-income populations, and children as a result of selecting this alternative.
NOISE		
The noise impacts from implementing the Proposed Action are considered to be less than significant. The Proposed Action also returns a portion of the current special use airspace, that area primarily west of Interstate-15, back to the NAS. A good portion of this area lies above the Mojave National Preserve. This would have a positive effect by eliminating the only special use airspace that currently overlays this preserve and would eliminate any military aircraft noise generated as a result of its use.	The noise impacts from implementing the Alternative 1 are considered to be less than significant.	Under the No Action Alternative, no changes would occur to existing noise levels; therefore, there would be no additional noise impacts as a result of selecting this alternative.

Table ES-1: Summary of Alternatives (Con't)

PROPOSED ACTION	ALTERNATIVE 1	NO ACTION ALTERNATIVE
SAFETY		
The safety impacts as a result of selecting the Proposed Action are considered positive in relation to aircraft spillouts into the NAS. Other safety factors are considered to be less than significant.	Same as Proposed Action.	Under the No Action Alternative, no changes would occur to the existing Silver MOA airspace and therefore, there would be no additional impacts to safety as a result of selecting this alternative. However, even though there would be no additional safety impacts to this alternative, the current USAF operational flight safety deficiencies described in Paragraph 3.5.3 would continue.
SOCIOECONOMICS		
The socioeconomic impacts that the Proposed Action would impose on VFR commercial and general aviation traffic are considered to be less than significant. The changes considered under the Proposed Action are below 9,000 ft MSL; therefore, this alternative would impose no socioeconomic impacts on IFR commercial and/or general aviation traffic flying above 18,000 ft MSL (FL180).	Same as Proposed Action.	Under the No Action Alternative, no changes would occur to the existing Silver MOA airspace and therefore, there would be no additional adverse impacts to socioeconomic features as a result of selecting this alternative.
NATIVE AMERICAN CONCERNS		
Changes to the airspace designations proposed in the Proposed Action would not alter the status quo. No further consultation is required.	Changes to the airspace designations proposed in Alternative 1 would not alter the status quo. No further consultation is required.	Under the No Action Alternative, no changes would occur to existing airspace.

1. Purpose and Need for Changing the Silver Military Operations Area

1.1 Purpose and Need for the Proposed Action

The Silver MOA is located in southeastern California between Las Vegas, Nevada and Los Angeles, California (Figure 1-1); it overlays a portion of Interstate 15 (I-15) and the town of Baker, California.

The purpose of the proposed action is to reconfigure the Silver MOA to better support U.S. and allied air and ground forces during advanced combat training conducted at the National Training Center (NTC), Fort Irwin, California. Air Warrior aircrews train at the NTC to develop and evaluate tactics and optimize the combat capability of airborne weapons systems and tactics, to include CAS and urban warfare tactics. The purpose of the Silver MOA is to support training at the NTC by providing Air Warrior aircraft with loiter and marshalling airspace while waiting to be called into the battle training area.

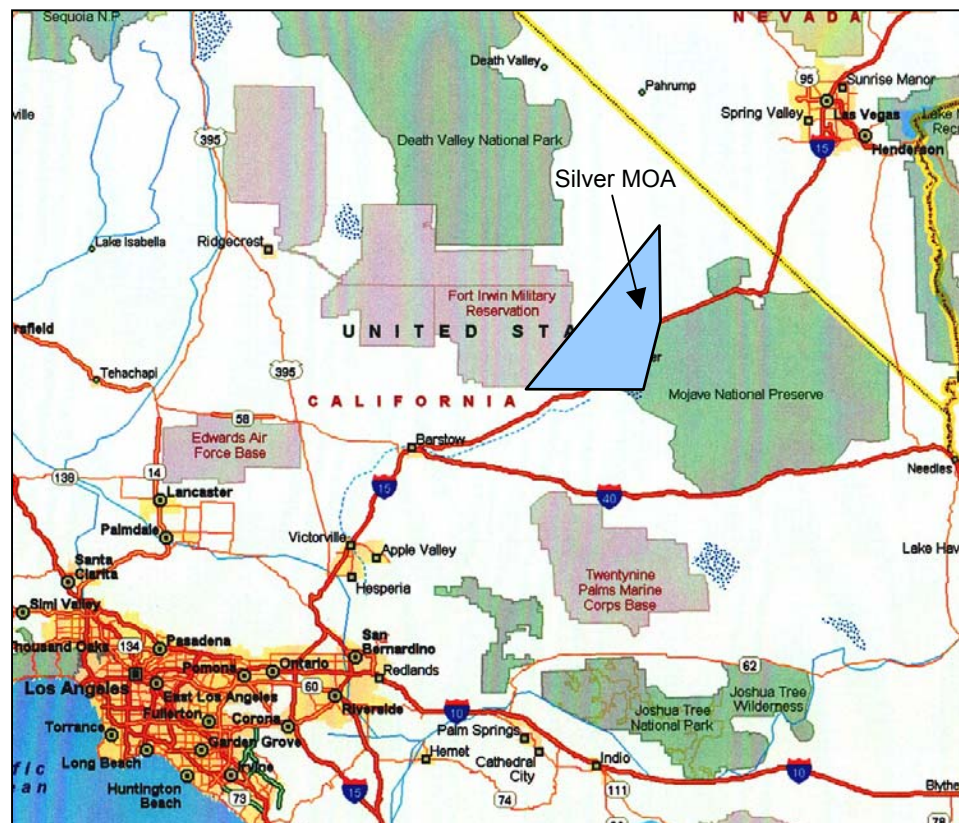


Figure 1-1: Regional Setting

The proposed changes are needed because the current airspace altitude ceiling is too low to realistically execute the assigned training missions. The current airspace configuration hampers realistic, high fidelity training required for aircrews to practice in the full spectrum of offensive and defensive weapons employment, tactics, and

countermeasures. Likewise, aircrews simulating adversaries must alter their efforts to replicate enemy tactics, weapons employment, and countermeasures. Additionally, this airspace action would help eliminate airspace spill-outs—unauthorized crossing of the horizontal and/or vertical boundaries of the special use airspace into the NAS—by aircraft transitioning between the Silver and Barstow MOAs (the Silver and Barstow MOAs are connected at one geographic spot at approximately 35° 07.30 N, 116° 34.00 W). This would improve flight safety for all nearby airspace users.

1.2 Introduction

1.2.1 Background on the Silver MOA

The Silver MOA was originally named the Baker MOA. The Baker MOA was established in 1981 to support electronic warfare training for George AFB, California. Prior to George AFB closure in 1992, the Baker MOA was transferred from the 35th Tactical Fighter Wing at George AFB to the 57th Fighter Weapons Wing (FWW) (now known as the 57th Wing) at Nellis AFB through a letter of agreement between the 57 FWW and the Los Angeles Air Route Traffic Control Center (LAARTCC and 57 FWW 1990). On 8 March 1990 its name was changed to the Silver MOA. Nellis AFB uses the Silver MOA as a holding and marshalling area to support USAF Air Warrior and Army training at the NTC.

1.2.2 Current Status and Missions

United States Army National Training Center

The mission of the NTC is to provide realistic combat training to prepare Army brigades for combat operations on the modern battlefield. The NTC is the only instrumented training facility in the world that is suitable for force-on-force and live-fire training of heavy brigade-sized military forces. Each month the NTC provides 4,000 to 5,000 soldiers the essential training opportunities necessary to maintain and improve military readiness in support of our national security. The evolving sophistication of military equipment and advances in technology require a comprehensive battlefield that realistically simulates the tempo, range, and intensity of current and future conflicts. The NTC provides all the necessary combat and support components to conduct world-class combat training.

United States Air Force Air Warrior

An integral part of the NTC mission is the USAF Air Warrior mission. Stationed at Nellis AFB, Nevada, the 549th Combat Training Squadron provides airpower support to the Army's Air-Land Battle training at the NTC. Fighter units and Theater Air Control System elements from the USAF, USN, USMC, and occasionally allied nations, perform their CAS missions at the NTC. The fast-paced battles; the intense real-time command, control, and communication requirements; and visual simulations of armor, anti-armor, artillery, and air defense weapon systems firings combine to present a highly realistic training environment for fighter pilots, forward air controllers, and air liaison officers. Air Warrior performs the following air support missions:

Counterair. Counterair consists of operations to attain and maintain a desired degree of air superiority by the destruction or neutralization of enemy forces. Counterair's two elements—offensive counterair and defensive counterair—enable friendly use of

otherwise contested airspace and disable the enemy's offensive air and missile capabilities to reduce the threat posed against friendly (ground and air) forces.

Counterland. Counterland involves those operations conducted to attain and maintain a desired degree of superiority over surface operations by the destruction or neutralization of enemy surface forces. The main objectives of counterland operations are to dominate the surface environment and prevent the opponent from doing the same. This independent or direct attack of adversary surface operations by air forces is the essence of asymmetric application. It is key to success during combat operations to decisively halt an adversary during initial phases of a conflict. Specific traditional functions associated with air counterland operations are interdiction and CAS.

To support the NTC mission, Air Warrior uses the Silver MOA as a holding and marshalling area for aircraft waiting to execute CAS missions in the NTC. Orbits are normally conducted at the upper altitude limits of the MOA to be as close to realistic altitudes as possible, and to maintain radio contact with controlling agencies and battlefield managers.

1.3 Intent and Organization of this Environmental Assessment

The USAF at Nellis AFB, Nevada has prepared this Environmental Assessment (EA) in accordance with the *National Environmental Policy Act (NEPA) of 1969* (42 USC § 4321); the *Council on Environmental Quality (CEQ) Implementation Regulations* (40 CFR §§ 1500-1508); *FAA Environmental Assessment Format/Content*; and Air Force Instruction 32-7061, *The Environmental Impact Analysis Process* (USAF 2003b). It was prepared to define, evaluate, and assess the potential environmental impacts of changing the Silver MOA to determine if an Environmental Impact Statement (EIS) is required, and to update the NEPA documentation to account for current and future aircraft training operations. At the conclusion of the EA process (unless sooner determined), the USAF at Nellis AFB must determine if the Proposed Action will cause significant environmental impacts. If not, then a Finding of No Significant Impact (FONSI) will be prepared. If it is determined that the Proposed Action will cause significant environmental impacts, then the USAF will either abandon the project or release a Notice of Intent (NOI) to prepare an EIS. The FAA is a cooperating agency in preparing this document (FAA 2004d; Appendix A).

The EA is organized in the following manner:

- ❖ Chapter 1 – Purpose and Need for Changing the Silver MOA. This chapter discusses the purpose and need for changing the Silver MOA, an introduction to Air Warrior, the environmental impact analysis process, and the environmental issues evaluated in this analysis.
- ❖ Chapter 2 – Description of the Proposed Action and Alternatives. This chapter describes the Proposed Action, and two other alternatives (one being a No-Action Alternative).
- ❖ Chapter 3 – Affected Environment. This chapter provides an overview of the baseline environmental conditions of the Silver MOA and the potentially affected environment.

- ❖ Chapter 4 – Environmental Consequences. This chapter addresses the potential impacts of implementing the Proposed Action and alternatives described in Chapter 2, when compared to baseline conditions presented in Chapter 3.
- ❖ Chapter 5 – Cumulative Impacts. This chapter presents the cumulative impacts resulting from this project.
- ❖ Chapter 6 – Other Related Considerations. This chapter presents the other required considerations (i.e., the irreversible and irretrievable commitments of resources).
- ❖ Chapter 7 – List of Preparers. This chapter presents the list of preparers involved in this document.
- ❖ Chapter 8 – Persons and Agencies Contacted. This chapter presents the list of persons and agencies contacted for data and/or information in preparing this document.
- ❖ Chapter 9 – Bibliography and References. This chapter presents the references cited in this document.
- ❖ Chapter 10 – Glossary of Terms. This chapter presents an explanation of the terms used in this document.
- ❖ Appendix – The Appendix contains copies of letters documenting Intergovernmental and Interagency Coordination for Environmental Planning (IICEP).

2. Description of the Proposed Action and Alternatives

2.1 Proposed Action

The USAF at Nellis AFB, Nevada proposes to modify its existing special use airspace (the Silver MOA). The Proposed Action proposes to change the Silver MOA in size and altitude to enhance realistic combat training at the NTC, Fort Irwin, California, and improve aviation safety. As depicted in Figure 2-1, the Silver MOA would be reconfigured reducing its size in the southeast and increasing its size in the southwest. These changes would result in a net reduction of special use airspace of approximately 215 square miles. The airspace no longer needed would be returned to the NAS. Once the new special use airspace boundaries were reconfigured, the new airspace would be divided into two parts: Silver North MOA and Silver South MOA. This alternative proposes to increase the altitude ceiling of the Silver North MOA to 9,000 ft MSL and establish the altitude ceiling of the Silver South MOA at 7,000 ft MSL—both MOAs would have an altitude floor of 200 ft AGL. The approximate physical dimensions of the Silver North MOA would be as follows:

Beginning at Lat 35° 39' 00" N; Long 115° 53' 03" W to
Lat 35° 24' 30" N; Long 115° 53' 03" W to
Lat 35° 06' 50" N; Long 116° 20' 00" W to
Lat 35° 04' 30" N; Long 116° 29' 00" W to
Lat 35° 07' 00" N; Long 116° 34' 03" W to the point of beginning; excluding the airspace below 3,000 feet AGL within a 3 nautical mile radius of the town of Baker, California (Lat 35° 16' 00" N; Long 116° 04' 33" W).

The approximate physical dimensions of the Silver South MOA would be as follows:

Beginning at Lat 35° 07' 00" N; Long 116° 34' 03" W to
Lat 35° 04' 30" N; Long 116° 29' 00" W to
Lat 35° 01' 20" N; Long 116° 41' 03" W to the point of beginning.

NOTE: Any changes to special use airspace must be made by the Federal Aviation Administration (FAA). The FAA is a cooperating agency to this action (FAA 2004d; Appendix A).

2.2 Alternative 1

Alternative 1 proposes to change the size and altitude ceiling of the current Silver MOA. As depicted in Figure 2-2, the Silver MOA would increase by approximately 110 square miles to the southwest. Under this alternative, no special use airspace would be returned to the NAS. The new Silver MOA would be increased in altitude to 10,000 ft MSL—the MOA would retain its altitude floor of 200 ft AGL. The approximate physical dimensions of the Silver MOA would be as follows:

Beginning at Lat 35° 39' 00" N; Long 115° 53' 03" W to
Lat 35° 22' 00" N; Long 115° 53' 03" W to
Lat 35° 06' 00" N; Long 116° 00' 03" W to
Lat 35° 01' 20" N; Long 116° 41' 03" W to the point of beginning; excluding the airspace below 3,000 feet AGL within a 3 nautical mile radius of the town of Baker, California (Lat 35° 16' 00" N; Long 116° 04' 33" W).

NOTE: Any changes to special use airspace must be made by the Federal Aviation Administration (FAA). The FAA is a cooperating agency to this action (FAA 2004d; Appendix A).

2.3 No Action Alternative

Under the No Action Alternative, no airspace changes would occur. As depicted in Figure 2-3, the Silver MOA would retain its current boundaries and altitudes (i.e., 200 ft AGL floor and 7,000 ft MSL ceiling).

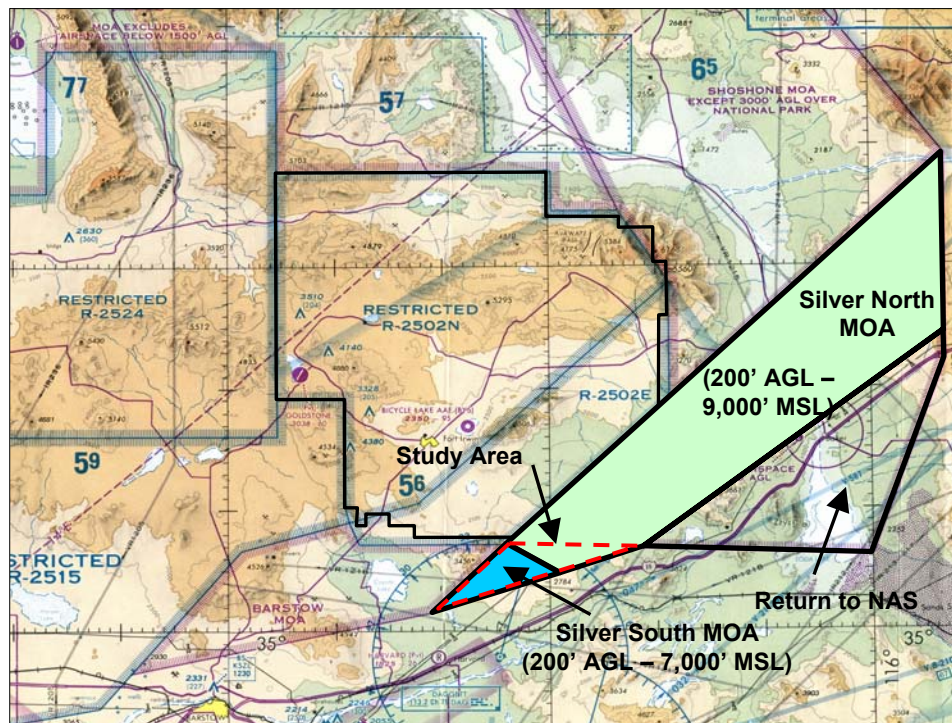


Figure 2-1: Proposed Action

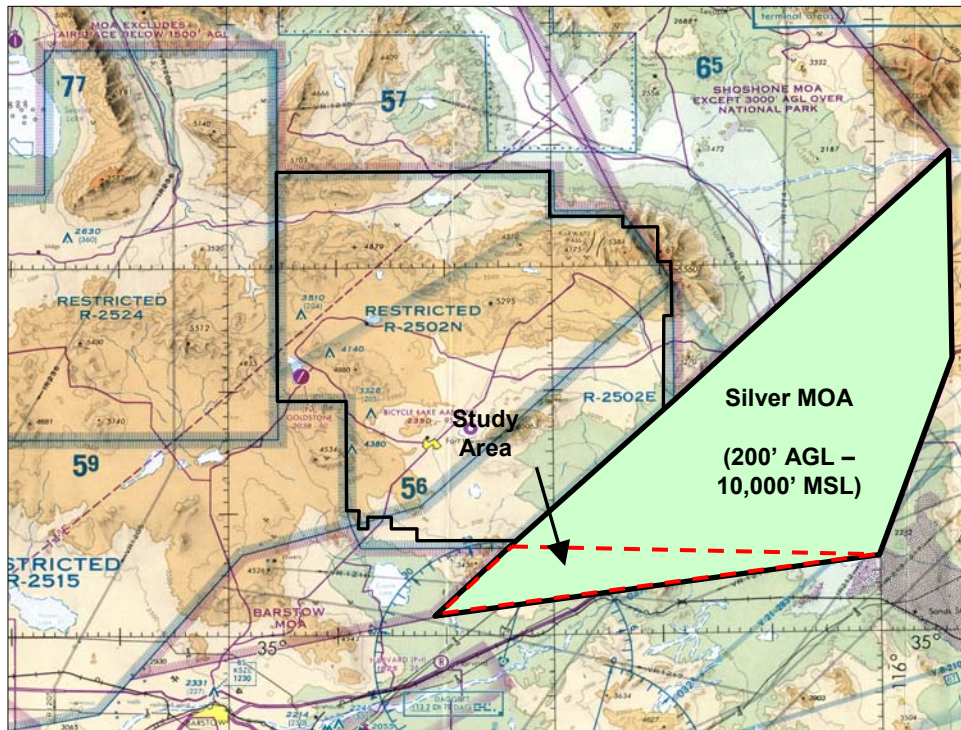


Figure 2-2: Alternative 1

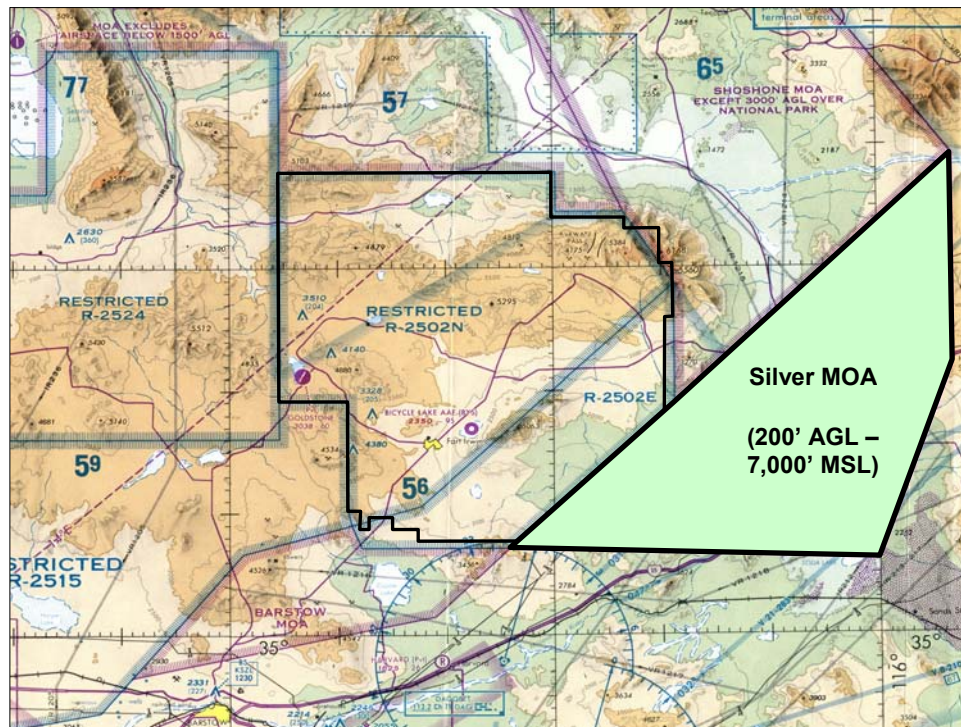


Figure 2-3: No Action Alternative

Table 2-1: Summary of Alternatives

PROPOSED ACTION	ALTERNATIVE 1	NO ACTION ALTERNATIVE
AIR QUALITY		
The emissions that are estimated to occur below the mixing altitude within the study area each year are well below <i>de minimus</i> levels; therefore, are less than significant.	Same as the Proposed Action.	Under the No Action Alternative, no changes would occur to existing air quality and therefore, there would be no additional adverse impacts on air quality as a result of selecting this alternative
AIRSPACE		
<ul style="list-style-type: none"> • The impacts that the Proposed Action would impose on NTC/Air Warrior operations are considered positive. • The impacts that the Proposed Action would impose on non-participating military operations are considered to be less than significant. • The impacts that the Proposed Action would impose on VFR commercial and general aviation traffic are considered to be less than significant. • The impacts that this alternative would impose on IFR commercial and/or general aviation traffic and the NAS are considered less than significant. 	<ul style="list-style-type: none"> • The impacts that Alternative 1 would impose on NTC/Air Warrior operations are considered positive. • The impacts that Alternative 1 would impose on non-participating military operations are considered less than significant. • The impacts that Alternative 1 would impose on VFR commercial and/or general aviation traffic, and the NAS may be considered significant; if this alternative were selected, the USAF and FAA would need to develop mitigation measures to reduce the impacts. • The impacts that this alternative would impose on IFR commercial and/or general aviation traffic and the NAS are considered less than significant. 	<p>Under the No Action Alternative, the operational constraints that currently exist would continue. Air Warrior aircrews would continue to operate under unrealistic altitude ceiling constraints that do not allow them execute realistic, high fidelity combat training. The current airspace configuration would continue to hamper aircrews attempting to practice in the full spectrum of offensive and defensive weapons employment, tactics, and countermeasures. Likewise, aircrews that are tasked simulate an adversary's tactics, weapons employment, and countermeasures would continue to alter their efforts due to the current airspace constraints. Additionally, the No Action Alternative would continue to perpetuate airspace spill-outs when aircraft transition between the Silver and Barstow MOAs. Under the No Action Alternative, there would be no change to current conditions involving non-participating military operations. Under the No Action Alternative, there would be no change to current conditions involving VFR/IFR commercial and/or general aviation operations</p>

Table 2-1: Summary of Alternatives (Con't)

PROPOSED ACTION	ALTERNATIVE 1	NO ACTION ALTERNATIVE
BIOLOGICAL		
<ul style="list-style-type: none"> • The potential impacts to federal and state listed threatened, endangered, and sensitive species were found to have no additional environmental effects. • The potential impacts to migratory birds and/or other raptors were found to have no additional environmental effects. 	Same as Proposed Action.	Under the No Action Alternative, no changes to the current airspace configuration would occur, and therefore there would be no additional impacts to threatened, endangered, and sensitive species, and/or migratory birds and raptors.
ENVIRONMENTAL JUSTICE		
The Proposed Action involves changes to the airspace above 7,000 ft MSL—there are no changes proposed to the airspace over populated areas or ground disturbing activities. Furthermore, the new airspace boundaries proposed by the Proposed Action exclude the town of Baker; therefore, there would be no new adverse impacts to either minority or low-income populations, and children.	Alternative 1 involves changes to the airspace above 7,000 ft MSL—there are no changes proposed to the airspace over populated areas or ground disturbing activities; therefore, there would be no new adverse impacts to either minority or low-income populations, and children.	Under the No Action Alternative, no changes would occur to existing airspace and therefore, there would be no new adverse impacts to minority or low-income populations, and children as a result of selecting this alternative.
NOISE		
The noise impacts from implementing the Proposed Action are considered to be less than significant. The Proposed Action also returns a portion of the current special use airspace, that area primarily west of Interstate-15, back to the NAS. A good portion of this area lies above the Mojave National Preserve. This would have a positive effect by eliminating the only special use airspace that currently overlays this preserve and would eliminate any military aircraft noise generated as a result of its use.	The noise impacts from implementing the Alternative 1 are considered to be less than significant.	Under the No Action Alternative, no changes would occur to existing noise levels; therefore, there would be no additional noise impacts as a result of selecting this alternative.

Table 2-1: Summary of Alternatives (Con't)

PROPOSED ACTION	ALTERNATIVE 1	NO ACTION ALTERNATIVE
SAFETY		
The safety impacts as a result of selecting the Proposed Action are considered positive in relation to aircraft spillouts into the NAS. Other safety factors are considered to be less than significant.	Same as Proposed Action.	Under the No Action Alternative, no changes would occur to the existing Silver MOA airspace and therefore, there would be no additional impacts to safety as a result of selecting this alternative. However, even though there would be no additional safety impacts to this alternative, the current USAF operational flight safety deficiencies described in Paragraph 3.5.3 would continue.
SOCIOECONOMICS		
The socioeconomic impacts that the Proposed Action would impose on VFR commercial and general aviation traffic are considered to be less than significant. The changes considered under the Proposed Action are below 9,000 ft MSL; therefore, this alternative would impose no socioeconomic impacts on IFR commercial and/or general aviation traffic flying above 18,000 ft MSL (FL180).	Same as Proposed Action.	Under the No Action Alternative, no changes would occur to the existing Silver MOA airspace and therefore, there would be no additional adverse impacts to socioeconomic features as a result of selecting this alternative.
NATIVE AMERICAN CONCERNS		
Changes to the airspace designations proposed in the Proposed Action would not alter the status quo. No further consultation is required.	Changes to the airspace designations proposed in Alternative 1 would not alter the status quo. No further consultation is required.	Under the No Action Alternative, no changes would occur to existing airspace.

3. Affected Environment

Under NEPA, the analysis of environmental conditions is directly related to the expected environmental consequences of the Proposed Action and alternatives. The procedures established in NEPA require that the analysis address the components of the environment potentially affected by the proposed action. The environment includes all areas and lands that may be affected, as well as the natural, cultural, and socioeconomic resources they contain or support. The locations and resources with no potential to be affected need not be analyzed.

Environmental resource areas typically explored in environmental assessments often include cultural and paleontology resources, earth resources, hazardous materials/waste and solid waste, land uses, recreational and visual resources, ground transportation, and hydrology and water resources. This proposed action proposes to change the airspace ceiling and boundaries only and does not propose to change the numbers and/or types of ground equipment, or exercise mission configurations. Cultural and paleontological resources were not explored because this action would not have any ground disturbing activities; earth resources were not explored because there would be no ground disturbing or construction activities; hazardous materials/waste and solid waste were not explored because no hazardous materials would be used or hazardous/solid wastes produced as a result of this project; land uses were not explored because this is not a land acquisition action; recreational and visual resources were not examined as they would remain unchanged as a result of this action; ground transportation was not explored because this project does not propose any new, or changes to existing, ground transportation resources; and hydrology and water resources were not explored because no water resources would be used for this project. The following environmental resources were considered relevant to the proposed action.

- | | |
|-------------------------|------------------|
| ❖ Air Quality | ❖ Noise |
| ❖ Airspace | ❖ Safety |
| ❖ Biological Resources | ❖ Socioeconomics |
| ❖ Environmental Justice | |

Region of Influence

Unless further defined in the following resource areas, the Region of Influence (ROI) for this project is defined as the current and proposed, lateral and vertical boundaries of the Silver MOA. The ROI is located in southern California between Las Vegas, Nevada and Barstow, California (Figure 1-1). Except for the town of Baker, California (estimated population less than 1,000 people), there are no major population centers or major industries within the ROI. Except for several major electrical transmission lines along the western boundary of the Silver MOA (within the Bureau of Land Management-designated Utility Corridor D), there are no significant man-made ground structures within the MOA. The current Silver MOA covers an area of approximately 675 square miles (Figure 2-3). Under the Proposed Action, the study area (the proposed new special use airspace located south of the current Silver MOA) covers an area of approximately 45 square miles (Figure 2-1). Under Alternative 1, the study area (the

proposed new special use airspace located south of the current Silver MOA) covers an area of approximately 110 square miles (Figure 2-2).

3.1 Air Quality

3.1.1 Definition of the Resource

Air quality at a given location can be described by the concentrations of various pollutants in the atmosphere. Units of concentration are generally expressed in parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The significance of a pollutant concentration is determined by comparing the concentration to an appropriate federal and/or state ambient air quality standard. The standards represent the allowable atmospheric concentrations and a reasonable margin of safety to protect the public health, welfare, and the more sensitive receptors in the population. Federal standards, established by the U.S. Environmental Protection Agency (EPA) are termed the National Ambient Air Quality Standards (NAAQS). The NAAQS for all averaging periods other than annual are defined as the maximum acceptable concentrations that may not be exceeded more than once per year. The annual NAAQS may never be exceeded. The state standards, established by the California Air Resource Board (CARB), are termed the California Ambient Air Quality Standards (CAAQS). The CAAQS are defined as the maximum acceptable pollutant concentrations that are not to be equaled or exceeded, depending on the specific pollutant.

The pollutants considered in the impact analysis of this EA include volatile organic compounds (VOC), carbon monoxide (CO), nitrogen oxides (NO_x), and particulate matter (less than 10 microns) (PM_{10}). Nitrogen oxides and VOC are considered precursor emissions that form Ozone (O_3). Airborne emissions of lead (Pb) and hydrogen sulfide (H_2S) are not addressed in this EA because there are no known significant Pb or H_2S emission sources in the region or associated with the project and its alternatives.

3.1.2 Regulatory Setting

The *Federal Clean Air Act (CAA) of 1970* (42 USC § 7401) established the NAAQS and delegated the enforcement of air pollution control provisions of the CAA to the states. The CARB is responsible for enforcing state air pollution laws and regulations. In turn, the CARB has delegated the responsibility of regulating various air emission sources to local air districts. The proposed actions must comply with all applicable Mojave Desert Air Quality Management District (MDAQMD) rules and regulations.

Under the CAA, Section 176(c) requires federal agencies, including the Department of Defense (DOD), to ensure that proposed federal actions conform to the appropriate requirements in the Federal Implementation Plan (FIP) or State Implementation Plan (SIP). For federal actions that occur in federal criteria pollutant non-attainment or maintenance areas, the non-permitted activities of a proposed federal action must be evaluated under the general conformity rule (40 CFR § 51). This ensures that the proposed federal action conforms to an applicable SIP. The general conformity rule applies when a state or air district in which a federal action occurs has an EPA approved conformity rule in the SIP. The MDAQMD has an approved conformity rule.

Table 3.1-1: National and State Ambient Air Quality Standards

AIR POLLUTANT	AVERAGING TIME	NAAQS	CAAQS
CARBON MONOXIDE (CO)	8-hour	9 ppm	9 ppm
	1-hour	35 ppm	20 ppm
NITROGEN DIOXIDE (NO₂)	Annual	0.053 ppm	—
	1-hour	—	0.25 ppm
SULFUR DIOXIDE (SO₂)	Annual	0.03 ppm	—
	24-hour	0.14	0.04 ppm
	3-hour	0.5 ppm	—
	1-hour	—	0.25 ppm
PM₁₀	AGM	—	30 µg/m ³
	AAM	50 µg/m ³	—
	24-hour	150 µg/m ³	50 µg/m ³
OZONE (O₃)	1-hour	0.12 ppm	0.09 ppm

ppm: parts per million

µg/m³: micrograms per cubic meter

AGM: Annual Geometric Mean

AAM: Annual Arithmetic Mean

Source: California Air Resources Board

3.1.2.1 Air Conformity Statement

The Silver MOA is located in the eastern portion of the Mojave Desert Air Basin within San Bernardino County. The Proposed Action and alternatives would occur within the MDAQMD. The military operations occurring within the Silver MOA must comply with federal and/or state ambient air quality standards as defined by the NAAQS, established by the EPA; the CAAQS established by the CARB; and in accordance with MDAQMD Rule 2002 (40 CFR § 52). The CAA requires that each state develop its own SIP, which is its primary mechanism for ensuring that the NAAQS are achieved and/or maintained within that state. According to plans outlined in the SIP, designated state and local agencies implement regulations to control sources of criteria pollutants. The CAA requires that federal actions in non-attainment and maintenance areas do not hinder future attainment with the NAAQS and conform with the applicable SIP (i.e., California SIP). There are no specific requirements for federal actions in unclassified or attainment areas.

Table 3.1-2: Air Quality Criteria Thresholds

CONFORMITY ANNUAL	Tons	25	—	25	—	100
MDAQMD ANNUAL	Tons	15	100	25	25	15
MDAQMD DAILY	Pounds	137	548	137	137	82

VOC: Volatile Organic Compounds

Source: Mojave Desert Air Quality Management District

3.1.3 Region of Influence

Identifying the ROI for an air quality assessment requires knowledge of the pollutant types, source emission rates and release parameters, the proximity relationships of project emission sources to other emission sources, and local and regional meteorological conditions. For the purpose of this air quality analysis, the ROI for emissions of O₃ precursors and CO from the proposed action would be the existing airshed surrounding Fort Irwin, California.

3.1.3.1 Climate

The climate in the study area is generally characterized as fair weather. The area experiences hot summers, mild winters, infrequent precipitation, and moderate afternoon breezes. The Sierra Nevada and Transverse Mountain ranges primarily influence the regional winds. Coastal northwest winds do not affect the study area as much as the high desert plain winds from the Los Angeles Basin due to the study area's distance inland. Typical regional winds have an average speed of approximately 13 knots (15 mph) and are generally from the southwest direction measured at Fort Corners—a station located in the center of Fort Irwin, California (NTC 2004)—the closest monitoring station where weather data is memorialized. NOTE: The Baker Airport does not have a weather monitoring station.

The mixing altitude of the atmosphere is another factor that contributes to air pollution dispersion patterns. The standard mixing altitude used for emissions calculations within the MDAQMD is 1,000 meters (3,280 ft) AGL (DeSalvio 2003). The mean average surface altitude within the Silver MOA is approximately 2,330 ft MSL (calculated using the highest and lowest terrain within the Silver MOA boundaries—the highest terrain is a 3,660 ft MSL peak and the lowest terrain is approximately 1,000 ft MSL). Therefore, the mean average mixing altitude would be approximately 5,610 ft MSL (3,280 feet + 2,330 feet). The current ceiling of the Silver MOA is 7,000 ft MSL. Most holding/marshalling military aircraft using the Silver MOA operate at the upper limit of the MOA, above the mixing altitude.

Monthly temperatures within the study area ranged from a maximum of approximately 118° F to a minimum of approximately 14° F. The 12-month average high temperature for calendar years 1999 to 2001 was 98.7° F; the 12-month average low was 29.4° F. These values were determined from climatic data recorded at 15 Fort Irwin meteorological stations (NTC 2004).

Most of the annual rainfall is produced by mid-latitude storms from August to April. During the summer months, precipitation occurs as a result of widely scattered thunderstorms. Annual average rainfall is approximately 3.87 inches (NTC 2004).

Relative humidity is typically high in the winter and low in the summer. Based on data recorded at the Fort Irwin monitoring stations, the average monthly relative humidity ranges from a high of approximately 56 percent in February to a low of approximately 20 percent in May. The 12-month average relative humidity was 31.8 percent for calendar years 1999 to 2001 (NTC 2004).

3.1.4 Current Conditions

The project area is within the eastern part of the MDAQMD within San Bernardino County. The San Bernardino County portion of the air basin is currently classified and designated as “attainment” for O₃, as a maintenance area for CO, and is in “non-attainment” for PM₁₀, commonly referred to as “fugitive dust.” All other criteria pollutants are in compliance.

The current mix of aircraft using the Silver MOA in support of Air Warrior activity is approximately 80 percent A-10s, 10 percent F-16s, and 10 percent other (Dydyk 2004).

3.2 Airspace

3.2.1 Definition of the Resource

3.2.1.1 National Airspace System

The *Federal Aviation Act of 1958* (49 USC) created the FAA and charged the FAA with ensuring the safety of aircraft and the efficient use of the NAS within the jurisdiction of the U.S. The NAS—commonly referred to as the Air Traffic Control (ATC) System—comprises the airports, air carriers, and air traffic controllers that collectively make safe and efficient air transportation possible within the U.S.

3.2.1.1.1 Flight Rules

The safe, orderly, and compatible use of the nation’s airspace is made possible through a system of flight rules and regulations, airspace designations, and ATC procedures. Just as traffic laws and vehicle operating rules govern the use of the Nation’s highways, flight rules and regulations, airspace designations, and ATC procedures govern the use of the NAS. This system accommodates the individual and common needs of general, commercial, and military aviation without imposing unreasonable restrictions on any one group. The NAS has helped achieve a level of air safety that is widely considered safer than driving an automobile. The primary reasons for this level of air safety are the manner in which airspace is structured across the U.S., and the way it is managed to protect aircraft operations around busy airports, along a complex network of airways and jet routes, and within areas where special activities, such as military flight operations are conducted.

The FAA manages the NAS by establishing rules that specify how aircraft must be operated; depicting routes and other areas on maps that identify where aircraft may or may not fly; and providing ATC services that help aircraft operate in a safe and orderly manner. Collectively, these actions are intended to make airspace use as effective and

compatible as possible for all types of aircraft, from private propeller-driven aircraft to large high-speed commercial and military jet aircraft.

Visual Flight Rules

Visual Flight Rules (VFR) govern the procedures for conducting flight under visual conditions. The term “VFR” is also used in the U.S. to indicate weather conditions that are equal to or greater than minimum VFR requirements (FAA 2004a). Pilots flying between local airports and airfields within a familiar geographical area may operate under VFR. Visual Flight Rules generally allow pilots to fly off published instrument routes (weather conditions permitting) using visual references such as highways, power lines, railroads, or other visual cues. Pilots may also follow federal airways flying at altitudes not used for instrument flight. Flying under VFR is restricted to altitudes below 18,000 ft MSL (FL180) and does not require flight clearances from ATC (unless flight routes transit airspace that require ATC clearances), although traffic advisories may be requested. Pilots flying VFR must exercise “see-and-avoid” clearance precautions, which means that they must be vigilant of their surroundings and alter their course or altitude as necessary to remain clear of other traffic, terrain, populated areas, clouds, etc.

Instrument Flight Rules

Instrument Flight Rules (IFR) govern the procedures for conducting instrument flight (FAA 2004a). Other air traffic, including appropriately certified general aviation pilots, commercial air carriers, corporate jets, and military aircraft, operate under IFR. To fly under IFR, pilots must be trained and certified in advanced navigational methods and adhere to ATC clearances containing specific flight routes and altitudes. Air Traffic Control clearances, ATC radar, and navigational aid systems keep IFR aircraft separated from each other from takeoff to landing. The safe and compatible use of all airspace by both VFR and IFR aircraft depends heavily on pilot adherence to the rules that apply to their types of operations.

Weather influences the type of flight rules that must be followed. Visual Flight Rules flight requires a ceiling of 1,000 ft AGL or greater and horizontal visibility of 3 miles or greater (14 CFR, Chapter 1, Part 91). If weather conditions are below these minimums, an aircraft must fly IFR or not at all. On routine combat training missions, military pilots may transition between IFR and VFR during different phases of flight (i.e., IFR flight during high altitude cruise to and from the target area and VFR during low altitude CAS within the target area).

3.2.1.2 *Airspace Structure*

The NAS is comprised of two airspace classifications: uncontrolled and controlled airspace. These classifications allow for safe use of the airspace by multiple users (e.g., general aviation, commercial, and military aircraft). These classifications are described below (FAA 2004a and FAA 2000).

3.2.1.2.1 *Uncontrolled Airspace*

All uncontrolled airspace (airspace that has not been designated as Class A, B, C, D, or E) is designated as Class G airspace. Special use airspace and Military Training Routes (MTR) are also categorized as uncontrolled airspace.

Special Use Airspace

Special use airspace is a subcomponent of the NAS. It is airspace of defined dimensions wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities. Except for Controlled Firing Areas (CFA), special use airspace areas are depicted on aeronautical charts. Prohibited and Restricted Areas are regulatory special use airspace and are established in 14 CFR, Chapter 1, Part 11, Subpart A, through the rulemaking process. Warning Areas, MOAs, Alert Areas, and CFAs are non-regulatory special use airspace (FAA 2000). The two types of special use airspace supporting NTC operations (MOAs and Restricted Areas) are explained below.

Military Operations Areas

Military Operations Area boundaries are depicted on aeronautical charts and are identified by geographical names for the specific area (i.e., Silver MOA). A MOA is airspace designated outside of Class A airspace, to separate or segregate certain non-hazardous military activities from IFR traffic and to identify to VFR pilots where these activities are conducted. Military Operations Areas are designated to contain non-hazardous, military flight activities including, but not limited to, air combat maneuvers, air intercepts, low altitude tactics, etc. Military Operations Areas may extend below 1,200 ft AGL if a mission requirement exists and there are minimal adverse aeronautical effects. Provisions must be made to enable aerial access to private and public use lands beneath the area, and for terminal VFR and IFR flight operations. Provisions must also be made to accommodate instrument arrivals/departures at affected airports with minimum delay. The MOA shall exclude the airspace 1,500 ft AGL and below within a 3-nautical mile radius of airports available for public use. This exclusion may be increased if necessary based on unique circumstances. Military Operations Areas, in effect, are always joint use. This means that VFR aircraft are not denied access to MOAs and IFR aircraft may be routed through the airspace when approved separation can be provided from MOA activity. Procedures for use of the airspace by nonparticipating IFR traffic shall be set forth in letters of agreement between the controlling and the using agencies.

Restricted Areas

Restricted Area boundaries are depicted on aeronautical charts and identified by the letter "R" followed by a number for the specific area (i.e., R-2502E). Restricted Areas are established when it is determined necessary to confine or segregate activities considered hazardous to nonparticipating aircraft. Aircraft flight, while not wholly prohibited, is subject to restriction. Restricted Areas denote the existence of unusual, often invisible hazards to aircraft such as artillery firing, CAS, or guided missiles. The Restricted Area altitude floor may be established to the surface only when the using agency owns, leases, or by agreement controls the underlying surface.

Military Training Routes/AFFTC Low-Level Routes

National security depends largely on the deterrent effect of our airborne military forces. To be proficient, the military services must train in a wide range of airborne tactics. One phase of this training involves low-altitude navigation combat tactics. The required maneuvers and high speeds are such that they may occasionally make the "see and avoid" aspect of VFR flight more difficult without increased vigilance. To ensure the greatest practical level of safety for all flight operations, the MTR program was conceived.

The MTR program is a joint FAA–DOD venture. Department of Defense and associated Reserve and Air Guard units use MTRs for conducting low-altitude tactical navigation training in both IFR and VFR weather conditions below 10,000 ft MSL at airspeeds in excess of 250 knots. Military Training Routes have both vertical and lateral defined limits (DOD 2003). Visual Flight Rules MTRs are used under VFR conditions only; IFR MTRs are used under VFR and/or IFR conditions. Nonparticipating aircraft are not prohibited from flying within an MTR; however, extreme vigilance must be exercised when flying through or near these routes. Military Training Routes are not categorized as special use airspace.

The Air Force Flight Test Center (AFFTC) at Edwards AFB, California maintains several non-published low-altitude routes throughout the R-2508 Complex. These routes are used almost exclusively by the AFFTC for test missions, test mission preparation, and proficiency training. The AFFTC uses published VR and IR routes when required, but AFFTC routes are used to the maximum extent possible because they avoid known high potential mid-air collision areas. The only AFFTC low-level route that affects this proposal is the B-1B Low-Level route.

3.2.1.2.2 Controlled Airspace

Controlled airspace encompasses airspace (Class A, Class B, Class C, Class D, and Class E) within which the FAA provides ATC services:

Class A Airspace

Class A airspace originates at 18,000 ft MSL (FL180) and extends upward to an altitude of 60,000 ft MSL (FL600). Aircraft operating in this airspace must meet the requirements for instrument flight and operate solely under IFR.

Class B, C, and D Airspace

These three airspace classes surround airports with ATC towers and define the airspace under tower or ATC control. An ATC clearance is required to enter and operate within Class B airspace. Pilots flying VFR are provided sequencing and separation from other aircraft while operating within Class B airspace. Aircraft in Class C and D airspace must be in radio communication with the ATC facility that controls the airspace.

Class E Airspace

Generally, if controlled airspace is not Class A, B, C, or D, it is classified as Class E airspace. Class E airspace has no defined vertical limit but rather it extends upward from either the surface (or a designated altitude) to the overlying or adjacent controlled airspace. Civilian low altitude airways (described below) are Class E airspace areas and, unless otherwise specified, extend upward from 1,200 ft AGL to, but not including, 18,000 ft MSL (FL180).

Airways

Airways are established to form a transportation corridor, the centerline of which is defined by radio navigation aids (typically VOR stations). Low altitude airways include the airspace within parallel boundary lines approximately 4 nautical miles each side of the centerline. High altitude jet routes have no width limits; however, alignments are planned using protected airspace specified for VFR airways to prevent overlapping special use airspace or the airspace protected for other jet routes (FAA 2004a). Low

altitude airways are designed to handle mainly VFR general aviation; high altitude airways are designed to handle mainly IFR commercial jet aviation. Unless otherwise specified, low altitude airways include airspace extending upward from 1,200 ft AGL to, but not including 18,000 ft (FL180) MSL. High altitude airways extend from 18,000 ft (FL180) MSL up to 45,000 ft (FL450) MSL.

3.2.2 Regulatory Setting

The NAS is regulated and managed by the FAA. The *Federal Aviation Act of 1958* (FAA 1958) created the FAA and charged the FAA with ensuring the safety of aircraft and the efficient utilization of the NAS. This is done through the issuance of numerous Federal Aviation Regulations (FAR) and Federal Aviation Administration Orders (FAAO). The USAF also has numerous instructions to manage and control the special use airspace under its control (e.g., AFI 13-201, *Air Force Airspace Management* (USAF 2001a); AFI 13-203, *Air Traffic Control* (USAF 2003a); AFI 13-212, *Range Planning and Operations* (USAF 2001b); AFI 91-112, *Safety Rules for U.S. Strike Aircraft* (USAF 2000); NAFB Instruction 11-250, *Local Flying Procedures* (USAF 2002a); etc).

3.2.3 Region of Influence

The current special use airspace that supports combat training at the NTC is made up of MOAs and Restricted Areas. A visual description of the current special use airspace and study area can be seen on Figure 3.2-1.

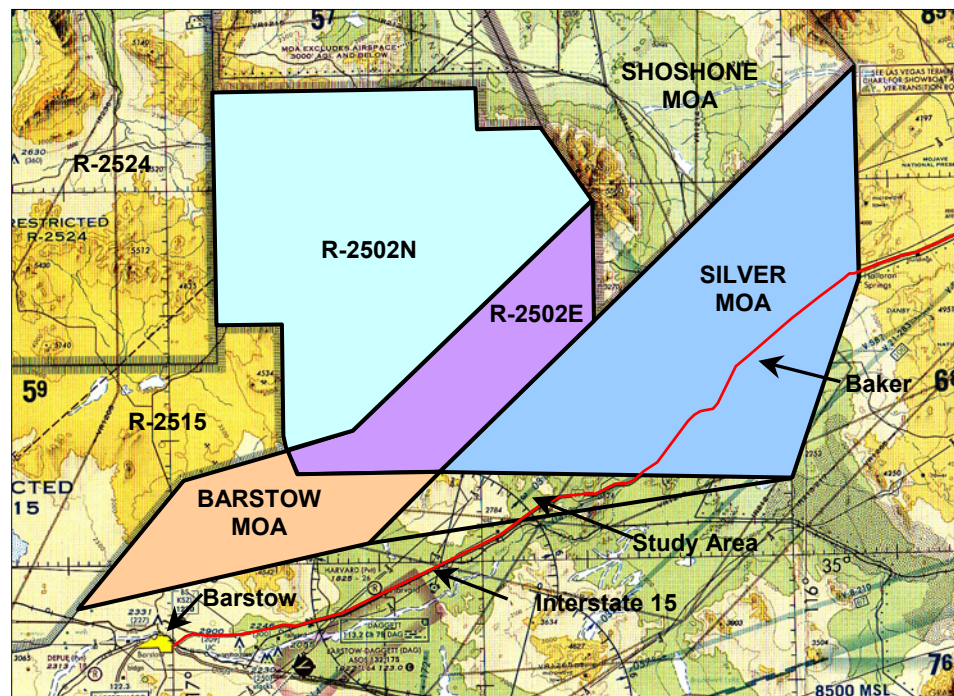


Figure 3.2-1: Current Special Use Airspace Configuration

Source: (USDOT 2003a)

3.2.3.1 Silver MOA

The Silver MOA lies to the east of the NTC adjacent to R-2502E and the Shoshone MOA. The Silver MOA overlays the town of Baker, California and a portion of I-15. Its vertical dimension is from 200 ft AGL to and including 7,000 ft MSL. It is activated intermittently—when needed by the military—by publishing a notice on the federal Notice to Airman (NOTAM) system. The controlling agency is Los Angeles Air Route Traffic Control Center (ARTCC). The using agency is the USAF, 57 OSS/OSM, Nellis AFB, Nevada. The approximate physical dimensions of the Silver MOA are as follows (FAA 2002):

Beginning at Lat 35° 39' 00" N; Long 115° 53' 03" W to
Lat 35° 22' 00" N; Long 115° 53' 03" W to
Lat 35° 06' 00" N; Long 116° 00' 03" W to
Lat 35° 07' 00" N; Long 116° 34' 03" W to the point of beginning; excluding the airspace below 3,000 feet AGL within a 3 nautical mile radius of the town of Baker, California (Lat 35° 16' 00" N; Long 116° 04' 33" W).

3.2.3.2 Barstow MOA

The Barstow MOA lies to the southwest of the NTC adjacent to R-2502E and R-2515. Its vertical dimension is from 200 ft AGL to but not including 18,000 ft MSL. It is active 0600 to 2200 hours Monday thru Friday and other times by NOTAM. The controlling agency is the High Desert Terminal Radar Approach Control (TRACON). The using agency is the R-2508 Complex Control Board (CCB) (see Glossary). The approximate physical dimensions of the Barstow MOA are as follows (FAA 2002):

Beginning at Lat 35° 07' 00" N; Long 116° 34' 03" W to
Lat 35° 01' 20" N; Long 116° 41' 03" W to
Lat 34° 56' 20" N; Long 117° 09' 03" W thence to the eastern border of R-2515 and the southern boundary of R-2502E to the point of beginning.

3.2.3.3 R-2502E

The R-2502E restricted area overlies the southwest portion of the NTC. Its vertical dimension is from the surface to unlimited. It is active on a continuous basis, 7 days per week but released to the FAA when not in use. The controlling agency is the High Desert TRACON. The using agency is the Commander, Fort Irwin, California. The approximate physical dimensions of R-2502E are as follows (FAA 2002):

Beginning at Lat 35° 28' 35" N; Long 116° 18' 48" W to
Lat 35° 18' 45" N; Long 116° 18' 48" W to
Lat 35° 07' 00" N; Long 116° 34' 03" W to
Lat 35° 07' 00" N; Long 116° 47' 48" W to
Lat 35° 08' 50" N; Long 116° 48' 43" W to
Lat 35° 10' 25" N; Long 116° 42' 18" W to the point of beginning.

The R-2502E restricted area airspace is released on a continual basis to the Los Angeles ARTCC through formal Letter of Agreement (High Desert TRACON and R-2508 CCB 2001). Most of the flight activity in R-2502E is helicopters, the majority of which were permanently assigned to Fort Irwin; the primary fixed-wing users are USAF aircraft flown to support Air Warrior and NTC combat training operations.

3.2.3.4 R-2502N

The R-2502N restricted area overlies the remainder of the NTC. Its vertical dimension is from the surface to unlimited. It is active on a continuous basis, 7 days per week but released to the FAA when not in use. The controlling agency is the High Desert TRACON. The using agency is the Commander, Fort Irwin, California. The approximate physical dimensions of R-2502E are as follows (FAA 2002):

Beginning at Lat 35° 37' 45" N; Long 116° 29' 43" W to
Lat 35° 34' 30" N; Long 116° 29' 43" W to
Lat 35° 34' 30" N; Long 116° 23' 33" W to
Lat 35° 28' 35" N; Long 116° 18' 48" W to
Lat 35° 10' 25" N; Long 116° 42' 18" W to
Lat 35° 08' 50" N; Long 116° 48' 43" W to
Lat 35° 10' 00" N; Long 116° 49' 03" W to
Lat 35° 19' 00" N; Long 116° 49' 03" W to
Lat 35° 19' 00" N; Long 116° 55' 23" W to
Lat 35° 37' 45" N; Long 116° 55' 23" W to the point of beginning.

Most of the flight activity in R-2502N is helicopters, the majority of which are permanently assigned to Fort Irwin; the primary fixed-wing users are USAF aircraft flown to support Air Warrior and NTC combat training operations.

3.2.4 Current Conditions

3.2.4.1 Military Operations

3.2.4.1.1 Military Operations Area Operations

Silver MOA

The Silver MOA was scheduled, activated, and used a total of 106 days in fiscal year (FY) 2002 (1 October 2001 thru 30 September 2002) and 93 days in FY 2003 (1 October 2002 thru 30 September 2003). This equated to a total of 2,046 sorties and 4,005 hours during 2002 and a total of 2,506 sorties and 5,026 hours during 2003. The total number of hours that were returned to the controlling agency was 4,755 hours in 2002 and 3,758 hours in 2003 (57 OSS/OSM 2002 and 2003). The aircraft that used the Silver MOA are reflected in Table 3.2-1.

Table 3.2-1: Aircraft Activity in the Silver MOA (FY 2003)

MONTH	AIR WARRIOR SORTIES	AIRCRAFT HOURS IN THE SILVER MOA	AVERAGE HRS/SORTIE
OCTOBER 2002	292	672.8	2.3
NOVEMBER 2002	372	816.7	2.2
DECEMBER 2002	372	610.4	1.6
JANUARY 2003	85	234.4	2.2
FEBRUARY 2003	372	610.4	2.8
MARCH 2003	221	403.5	1.8

MONTH	AIR WARRIOR SORTIES	AIRCRAFT HOURS IN THE SILVER MOA	AVERAGE HRS/SORTIE
APRIL 2003	71	94.1	1.3
MAY 2003	99	191.0	1.9
JUNE 2003	230	636.8	2.8
JULY 2003	230	538.8	2.3
AUGUST 2003	0	0	0.0
SEPTEMBER 2003	142	235.1	1.7
TOTALS	2,486	4,942	

Source: (Bee 2004)

The total number of sorties and hours reported in the Silver MOA in FY 2003 as reported in the *Restricted Area and Military Operations Area Annual Utilization Report* (57 OSS/OSM 2003) was 2,506 sorties and 5,026 hours. The total number of sorties and hours reported in the above table are 2,486 sorties and 4,942 hours. The differences (20 sorties and 84 hours) are attributed to the non-Air Warrior aircraft that scheduled and used the Silver MOA for other purposes. Real-world conditions and situations (Afghanistan, Iraq, etc.) could affect future aircraft use of the Silver MOA by as much as ± 20 percent. Based on this possible fluctuation, yearly sortie rates could be as low as 2,000 to as high as 3,000

The following aircraft have used the Silver MOA either in support of Air Warrior or for other purposes: A-10, AV-8B, B-1, B-2, CH-47, E-8B, EC-130, F-15, F-16, F-18, KC-130, MH-60, and T-38. Of these aircraft, the vast majority of Air Warrior sorties are made up of A-10s and F-16s. The current mix of aircraft using the Silver MOA in support of Air Warrior activity is approximately 80 percent A-10s, 10 percent F-16s, and 10 percent other (Dydyk 2004).

Barstow MOA

In FY 2002, the Barstow MOA was scheduled for a total of 4,160 hours and activated for 3,825 hours for a total of 6,007 sorties. Of these sorties, 4,447 came from Edwards AFB, 1,456 came from Nellis AFB, 12 from China Lake Naval Air Station, and the remaining 92 sorties came from other sources. In FY 2003 the Barstow MOA was scheduled for a total of 4,160 hours and activated for 2,313 hours for a total of 6,756 sorties. Of these sorties, 5,283 were from Edwards AFB, 1,397 were from Nellis AFB, 6 were from China Lake Naval Air Station, and the remaining 70 sorties came from other sources (Dundon 2003).

3.2.4.1.2 Military Training Routes/AFFTC Low-Level Routes

One IFR MTR, one AFFTC, and several VFR routes are located in and around the Silver MOA special use airspace (Figure 3.2-2). The minimum and maximum altitudes and military activity for the MTRs are shown in Table 3.2-2.

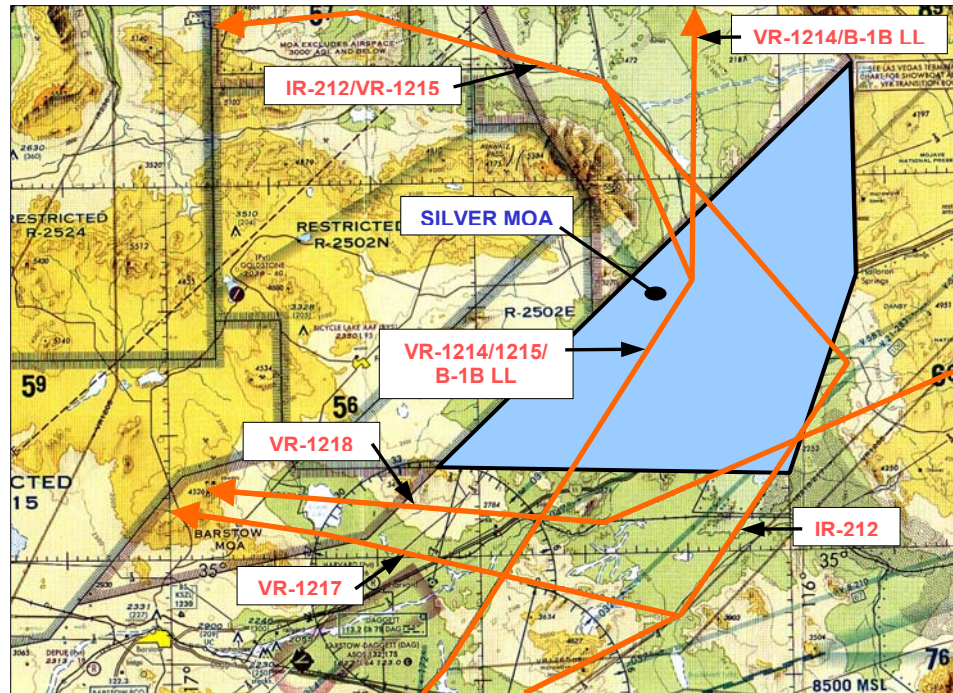


Figure 3.2-2: Military Training Ranges in the Vicinity of the Silver MOA

Source: (USDOT 2003a, DOD 2003, AFFTC 2000)

IR-212

Instrument Flight Route MTR IR-212 penetrates the southeastern corner of the Silver MOA, exits, and then flies across the Silver MOA in a northwestern direction north of Baker, California. It joins the same routing as VR-1215 to the northeast of the NTC and provides access to several military ranges in R-2524. It is scheduled through the 3rd MAW (G3), Marine Corps Air Station Miramar, California.

VR-1214, VR-1215, and B-1B Low Level Route

Visual Route-1214 and VR-1215 fly through the western part of the Silver MOA to the east of the NTC. These two routes follow identical paths through most of the Silver MOA and then diverge east of the NTC with VR-1214 continuing north to the Nevada Test and Training Range. Visual Route-1215 continues westward to the north of the NTC and provides access to several military ranges in R-2524. It is scheduled through the Resource Operations Center (ROC) at Edwards AFB, California.

The AFFTC B-1B Low Level route follows the same routing as VR-1214 through the Silver MOA.

VR-1217 and VR-1218

Visual Route-1217 and VR-1218 lie to the south of Silver MOA. These two routes provide access to restricted area R-2515. Visual Route-1218 flies through the southeaster corner of the Silver MOA. They run generally in an east-west direction, terminating at the western edge of R-2515. They are scheduled through the ROC at Edwards AFB, California.

VR-1214, 1215, and 1218 penetrate the Silver MOA. Flight activity on these routes is conducted in accordance with a letter of agreement between the 412th Operations Group at Edwards AFB, California and 57th Operations Group at Nellis AFB, Nevada (412 OG and 57 OG 1996).

Table 3.2-2: Military Training Routes in the Vicinity of the Silver MOA

ROUTE SPECIFICS	MILITARY TRAINING ROUTES				
	IR-212	VR-1214	VR-1215	VR-1217	VR-1218
PRIMARY USER/SCHEDULING ORGANIZATION	3rd MAW (G3)/ MCAS Miramar CA	AFFTC/ Edwards AFB CA	AFFTC/ Edwards AFB CA	AFFTC/ Edwards AFB CA	AFFTC/ Edwards AFB CA
HOURS OF OPERATION	Continuous	Continuous	Sunrise to Sunset, daily	Sunrise to Sunset, daily	Sunrise to Sunset, daily
AVERAGE NUMBER OF SORTIES/YR ¹	7	90 ²	5	8	18
ALTITUDES	200' AGL to 8,000' AMSL	100' to 1,500' AGL	100' to 1,500' AGL	100' to 1,500' AGL	200' to 1,500' AGL
ROUTE WIDTHS ³	±3 NM	±5 NM	±5 NM	±5 NM	±5 NM
TYPICAL MISSIONS	Low altitude training	Terrain following; low altitude flight to the NTTR	Terrain following; low altitude flight to the NAWC-WD	Low altitude testing and training	Low altitude testing and training

¹ Averaged from FY99 thru FY03 except IR-212 (averaged CY 02 and 03)

² Number includes B-1B LL sorties

³ Distances are either side of route centerline

Sources: (DOD 2003); 412th OSS/OSAA, AFFTC, Edwards AFB, California; 3rd Marine Aircraft Wing (G-3), MCAS Miramar, California

3.2.4.2 Non-Military Airspace Use

3.2.4.2.1 Airways

Low Altitude Airways

Several low altitude airways pass over the Silver MOA airspace (Table 3.2-3) (Figure 3.2-3). Low altitude airway V394 extends from the Daggett VORTAC to the Las Vegas VORTAC 6 nautical miles to the southeast of and parallel to the southeast boundary of R-2502E and the Shoshone MOA (on headings of 31°/211°). Airway V394 accommodates primarily arriving traffic into the Los Angeles basin. Contiguous airways V21/V283 connect the Hector VORTAC and Boulder City VOR, approximately 12 nautical miles to the southeast of R-2502E (on headings of 32°/213°). Airway V587 intersects airways V21/V283 from the Daggett VORTAC on headings of 47°/227°. Airways V12, V210, and V8 pass over the Hector VORTAC in nearly an east-west direction (USDOT 2003b).

The corridor encompassing these airways is 8 nautical miles wide and passes over the Silver MOA. The northwest boundary of the corridor is approximately 2 nautical miles (2.3 statute miles) from the southeast boundary of R-2502E.

The Silver MOA is capped at 7,000 ft MSL to protect the VFR traffic on V394 flying over the MOA.

Table 3.2-3: Altitudes and Route Widths of VFR Airways Adjacent to the Silver MOA

LOW ALTITUDE VFR AIRWAYS	MINIMUM ALTITUDE (FT AGL)	MAXIMUM ALTITUDE (FT MSL)	MINIMUM ENROUTE ALTITUDE (MEA) (FT MSL)	ROUTE WIDTH (A)
V21	1,200	17,999	10,000	± 4 NM
V283	1,200	17,999	10,000	± 4 NM
V394	1,200	17,999	12,000	± 4 NM
V587	1,200	17,999	10,000	± 4 NM

Source: (USDOT 2003b; FAA 2004a)

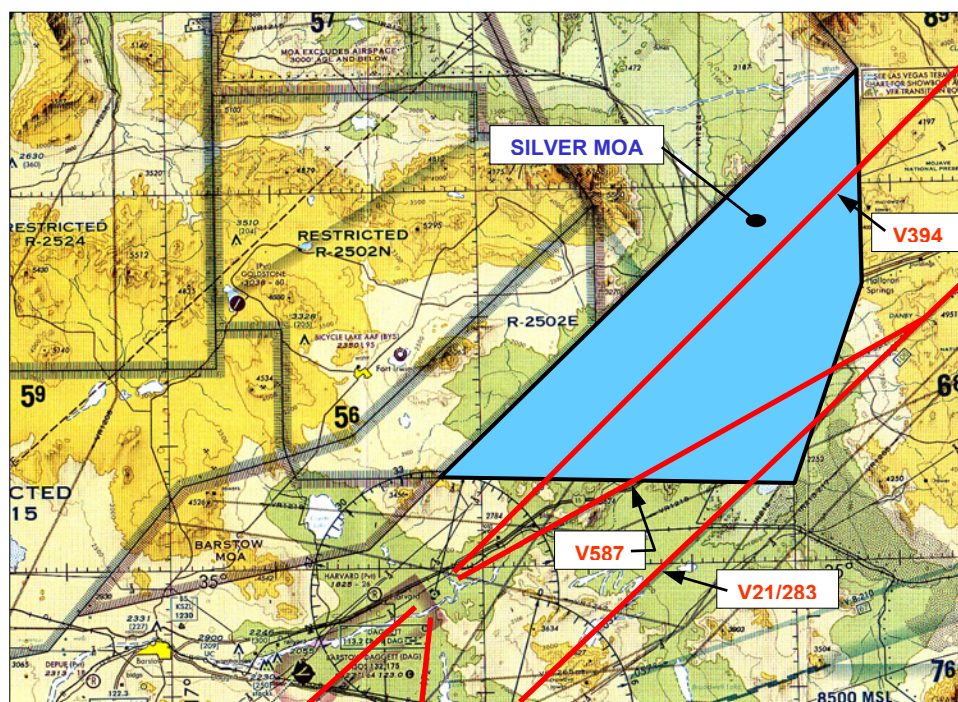


Figure 3.2-3: Low Altitude Airways near the Silver MOA

Source: (USDOT 2003a)

The FAA conducted a screen of their records of a typical busy Friday in August 2003, which revealed that a total of approximately 40, VFR aircraft were tracked on V394, V21, V283, and V587 between Las Vegas and Los Angeles. Visual Flight Rules general

aviation traffic is not normally tracked on ATC radars so an actual count is not possible. The radar tracks on these flights can be seen at Figure 3.2-4.

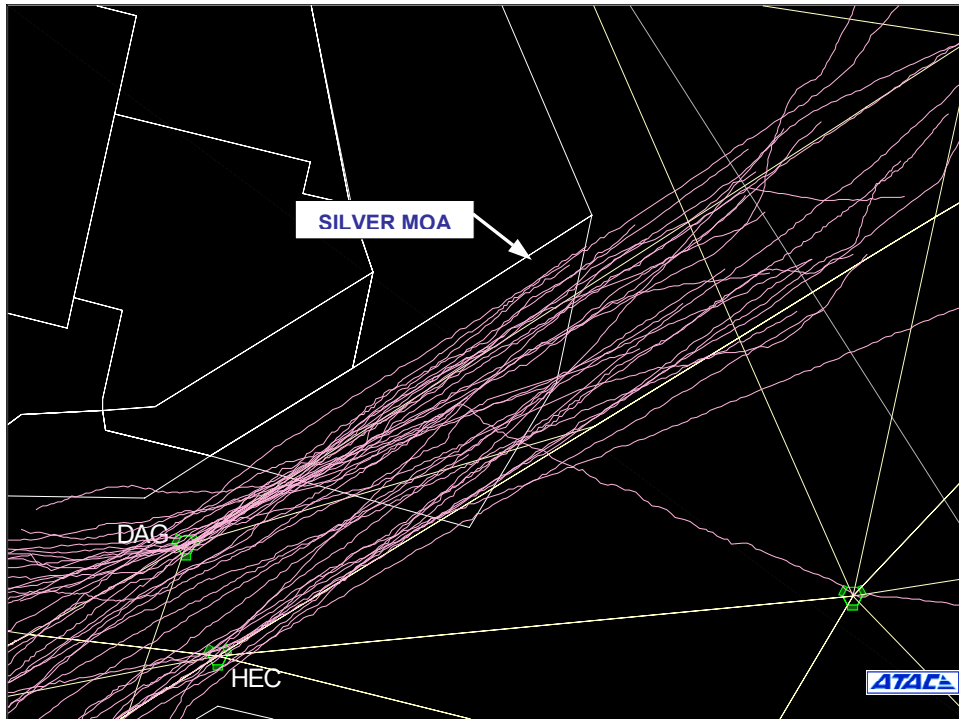


Figure 3.2-4: Low Altitude Civilian Aviation Flight Activity

Source: (FAA 2004c)

High Altitude Airways

Several high altitude (jet) airways are in the vicinity of the Silver MOA airspace (Table 3.2-4) (Figure 3.2-5). Contiguous airways J100/J146, the primary departure flow from the Los Angeles basin, extend from the Daggett VORTAC to the Las Vegas VORTAC on headings of 31°/211°. These airways parallel the southeast boundary of R-2502E and Shoshone MOA, 6 nautical miles to the southeast of R-2502E. Contiguous airways J60/J107 extend from the Hector VOR to the Boulder City VOR on headings of 32°/213° (USDOT 2003c). The corridor encompassing these airways is 8 nautical miles wide and pass over the Silver MOA. The northwest boundary of the corridor is approximately 2 nautical miles from the southeast boundary of Restricted Area R-2502E.

Table 3.2-4: Altitudes and Route Widths of IFR Airways Adjacent to the Silver MOA

HIGH ALTITUDE IFR AIRWAYS	MINIMUM ALTITUDE (FT AMSL)	MAXIMUM ALTITUDE (FT AMSL)	ROUTE WIDTH (A)
J60	18,000	60,000	± 4 NM
J100	18,000	60,000	± 4 NM
J107	18,000	60,000	± 4 NM
J146	18,000	60,000	± 4 NM

Source: (USDOT 2003c; FAA 2004a)

The FAA conducted a screen of their records of a typical busy Thursday in March 2004, which revealed that a total of approximately 34, IFR aircraft were tracked on J60, J100, J107, and J146 between Las Vegas and Los Angeles below 11,000 ft MSL (Table 3.2-5). The radar tracks on these flights can be seen at Figure 3.2-6. General aviation activity is included if it is operating under IFR, or if VFR and air traffic control is providing advisory services.

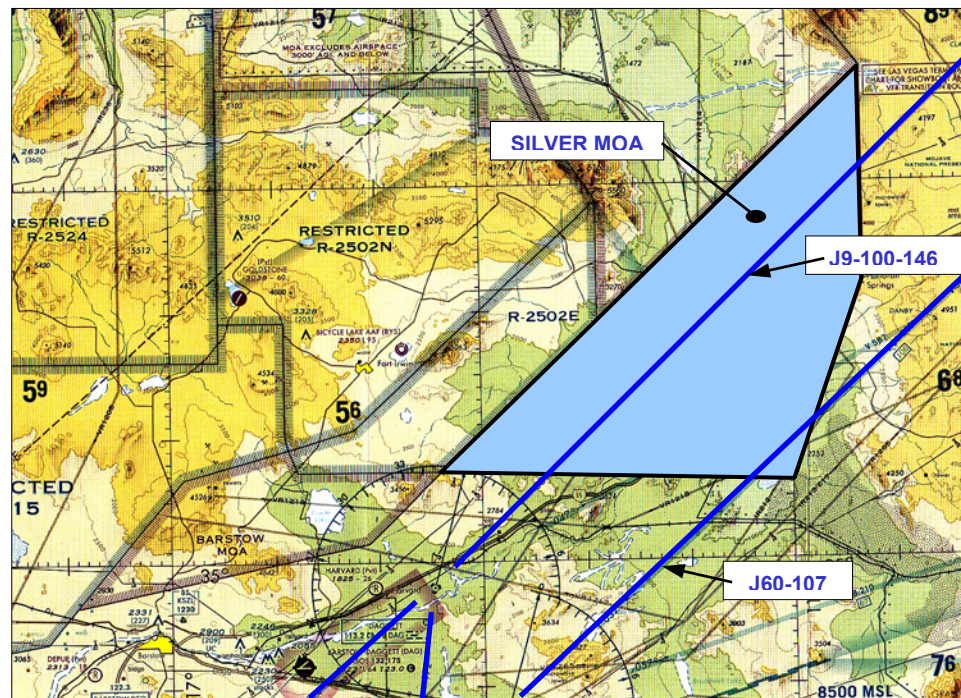


Figure 3.2-5: High Altitude Airways near the Silver MOA

Source: (USDOT 2003a)

Table 3.2-5: IFR Civilian Aviation Flight Activity

GRAPH COLOR	ALTITUDE	APPROXIMATE NUMBER
RED	Surface – 7,000 ft MSL	0
ORANGE	7,100 – 8,000 ft MSL	6
GREEN	8,100 – 9,000 ft MSL	7
BLUE	9,100 – 10,000 ft MSL	18
YELLOW	10,100 – 11,000 ft MSL	3
TOTAL		34

Source: (FAA 2004b)

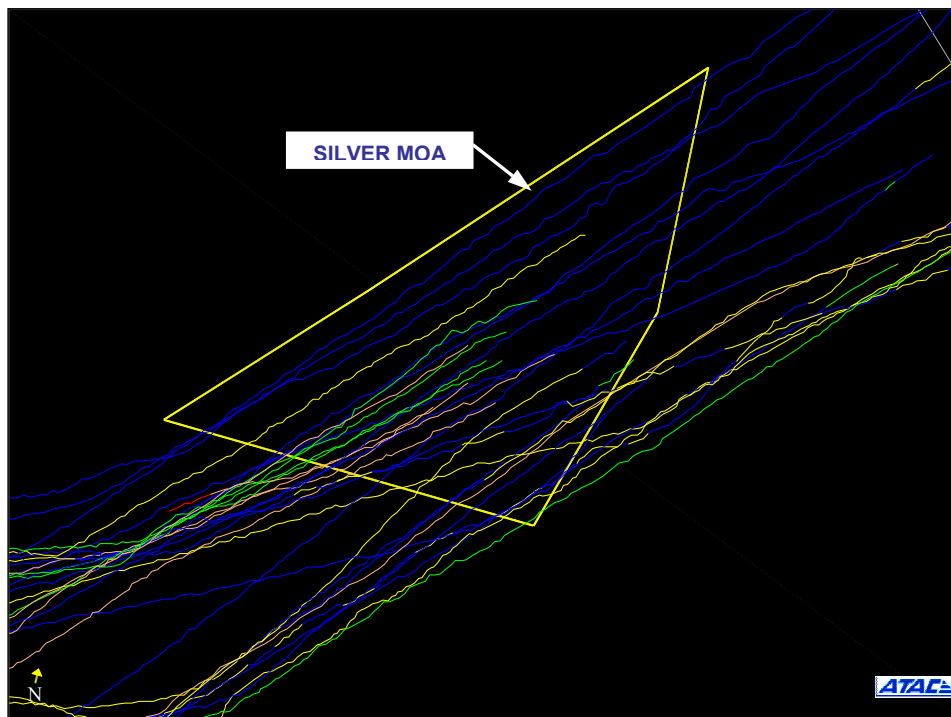


Figure 3.2-6: IFR Civilian Aviation Flight Activity

Legend:

Red	surface – 7,000 ft MSL	Orange	7,100 – 8,000 ft MSL
Green	8,100 – 9,000 ft MSL	Blue	9,100 – 10,000 ft MSL
Yellow	10,100 – 11,000 ft MSL		

Source: (FAA 2004b)

3.2.4.2.2 Airports

Baker Airport

The Baker Airport is located approximately 2.5 nautical miles north northwest of the town of Baker, California. It is located near the center of the Silver MOA. It is protected from MOA activity by a 3-nautical mile radius around, and up to 3,000 ft AGL above the airport. The Baker Airport had an estimated 350 operations in calendar year 2002. No aircraft were permanently based at the Baker Airport in 2002 (Table 3.2-6) (Vojkufka 2003).

Barstow-Daggett Airport

The Barstow-Daggett Airport is located approximately 11 nautical miles east of Barstow, California and approximately 12 nautical miles southwest of the study area. Though it is not located within the study area, its close proximity to the study area makes its flight activity important to analyze in this study. The Barstow-Daggett Airport had an estimated 36,500 operations (takeoffs and landings) in calendar year 2002. A little less than half of these were military operations, primarily helicopter operations in support of Fort Irwin NTC activity. There were 81 aircraft based at the Barstow-Daggett Airport in 2002, of which 35 were military aircraft (Table 3.2-6) (Vojkufka 2003).

Table 3.2-6: Estimated Aircraft and Operations at Airports in the Silver MOA Vicinity, Calendar Year 2002

ITEM	BAKER AIRPORT*	BARSTOW-DAGGETT AIRPORT
ANNUAL AIRCRAFT OPERATIONS		
CIVILIAN GENERAL AVIATION		
LOCAL	0	18,500
TRANSIENT	350 (est)	No Data
MILITARY	<u>0</u>	<u>18,000</u>
TOTAL	350 (est)	36,500
BASED AIRCRAFT		
CIVILIAN FIXED-WING AIRCRAFT		
SINGLE ENGINE PISTON	0	42
MULTI ENGINE PISTON	0	2
JET AIRCRAFT	0	0
CIVILIAN HELICOPTERS	0	2
MILITARY AIRCRAFT	<u>0</u>	<u>35</u>
TOTAL	0	81

* The Baker Airport is an uncontrolled airport with no services; annual aircraft operations are estimates.

3.3 Biological Resources

3.3.1 Regulatory Setting

The federal *Endangered Species Act (ESA)* of 1973 (16 USC 1531) and the *California Endangered Species Act* (Fish and Game Code §§ 2050, et seq.) establish the

guidelines for managing threatened, endangered, and sensitive species in California. In addition, the *Bald Eagle Protection Act of 1940* (16 USC §§ 668-668d), the *Migratory Bird Treaty Act of 1972* (16 USC §§ 703-711), and Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* also apply to this project (EO 13186).

3.3.2 Current Conditions

3.3.2.1 Threatened, Endangered, and Sensitive Species

US Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) list several federally protected species that may occur within the study area. The species listed by the USFWS are shown in Table 3.3-1.

Table 3.3-1: U.S. Fish and Wildlife Service List of Federal Threatened, Endangered, and Candidate Species

BIRDS	Bald Eagle (<i>Haliaeetus leucocephalus</i>)	T
	Least Bell's Vireo (<i>Vireo bellii pusillus</i>)	E
	Southwest Willow Flycatcher (<i>Empidonax traillii extimus</i>)	E
	Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>)	C
REPTILES	Desert Tortoise (<i>Gopherus agassizii</i>)	T, CH
FISH	Mojave Tui Chub (<i>Gila bicolor mahavensis</i>)	E
PLANTS	Lane Mountain Milkvetch (<i>Astragalus jaegerianus</i>)	E

E – Endangered

T – Threatened

C – Candidate Species

CH – Critical Habitat

Source: (USFWS 2004; Appendix B)

California Department of Fish and Game

The California Department of Fish and Game (CDFG) lists several species that may occur within the study area. The species listed by the CDFG are shown in Table 3.3-2.

Table 3.3-2: California Department of Fish and Game List of Threatened, Endangered, and Sensitive Species

STATE THREATENED	Desert tortoise (<i>Gopherus agassizii</i>)
STATE FULLY PROTECTED	Bighorn sheep (<i>Ovis canadensis nelsoni</i>)
SPECIES OF SPECIAL CONCERN	Hepatic tanager (<i>Piranga flava</i>)
	LeConte's thrasher (<i>Toxostoma lecontei</i>)
	Mojave fringe-toed lizard (<i>Uma scoparia</i>)
	Southwestern pond turtle (<i>Clemmys marmorata pallida</i>)
	Yellow-breasted chat (<i>Icteria virens</i>)
	Yellow warbler (<i>Dendroica petechia brewsteri</i>)

Source: (CDFG 2003; Appendix C)

3.3.2.2 Migratory Birds and Raptors

Birds may be permanent residents, overwinter, nest, or occasionally pass through the study area during migration. The diversity and density of bird species in the Mojave Desert are relatively low, especially at the lower elevations vegetated by saltbush scrub. The low numbers and lack of bird diversity are due to the absence of permanent water sources and lack of a tree overstory that is used by birds for cover and foraging. Seed-eating birds are generally found at lower elevations. The most commonly observed birds in the area include black-throated sparrows (*Amphispiza bilineata*), house finches (*Carpodacus mexicanus*), Gambel's quail (*Callipepla gambellii*), ground and morning doves (*Zenaidura macroura*), and other sparrows such as the white crowned sparrow (*Zonotrichia leucophrys*) and fox sparrow (*Passerella iliaca*).

Fall and spring migrants use springs and other water sources. Riparian and forest dwellers such as vireos and warblers may be observed using springs in the study area during migration periods. Springs are a valuable resource to most resident and migratory bird species.

Other migrant species include raptors. Although the numbers are not large, the sheer diversity of species is significant. Well over 100 bird species pass through the study area during migration. Costa's hummingbirds (*Calypte costae*) nest in the Mojave Desert, and Anna's hummingbirds (*Calypte anna*) overwinter in the area. Cactus rock wren (*Salpinctes obsoletus*) and canyon wrens (*Catherpes mexicanus*) use the rocky canyons and boulder piles in the area. Red-tailed hawks (*Falco jamaicensis*) are the most common raptor, while northern harriers (*Circus cyaneus*), golden eagles (*Agila chrysaetos*), and prairie falcons (*Falco mexicanus*) have also been observed in the area. Hawks and falcons use steep rocky cliffs for nesting sites. The barn owl (*Tyto alba*) is the most common nocturnal avian predator in the area. It usually roosts in abandoned buildings and large trees on homesteads. Turkey vultures (*Cathartes aura*) may also be observed in the area in the fall during migration.

Bird Strikes

The potential for bird strikes in this area is discussed in Section 3.6 (Safety). For specific information relating to bird strikes, refer to paragraph 3.6.3.3 (Potential Hazards to Flight).

3.4 Environmental Justice

3.4.1 Regulatory Setting

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that “each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations” (EO 12898).

3.4.2 Region of Influence

The ROI for environmental justice encompasses the town of Baker, California, the only concentrated population center within the project area.

3.4.3 Current Conditions

3.4.3.1 Minority Populations

Minority populations are defined as persons of Hispanic or Latino origin of any race or persons of one of the following races: Black or African American; American Indian and Alaska Native; Asian; or Native Hawaiian and other Pacific Islander. Table 3.3-1 provides information on the populations of Baker, San Bernardino County, and the State of California based upon race. Persons of Hispanic/Latino origin are included within the seven categories. Demographics were taken from the U.S. Census Bureau (USCB) 2000 Census. Minorities make up 32 percent of the population of Baker. In San Bernardino County and California, 41 percent of the populations are minorities.

Table 3.4-1: Population by Race

POPULATION CATEGORIES	CALIFORNIA	SAN BERNARDINO COUNTY	BAKER
WHITE ONLY	20,122,959	1,003,797	624
BLACK OR AFRICAN AMERICAN ONLY	2,219,190	151,879	58
AMERICAN INDIAN AND ALASKA NATIVE ONLY	312,215	19,054	10
ASIAN ONLY	3,682,975	79,103	7
NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ONLY	113,858	5,019	0
SOME OTHER RACE ONLY	5,725,844	356,920	192
TWO OR MORE RACES	1,694,607	93,662	31
TOTAL POPULATION:	33,871,648	1,709,434	922

Source: (USCB 2000)

3.4.3.2 Low-Income Populations

Low-income populations are defined as those persons living below the poverty level. The 2003 poverty level, established by the Department of Health and Human Services, for one individual is a total income of less than \$8,980. For family units with more than one member, add \$3,140 for each additional member (68 FR 26). Table 3.3-2 shows the poverty status based upon race for Baker, San Bernardino County, and the State of California. Thirty-three percent of the population of Baker is below poverty level. In San Bernardino County, 23 percent of the population lives below poverty level. Twenty percent of the population of California is living below the poverty level.

Table 3.4-2: Poverty Status by Race

INCOME IN 1999 BELOW POVERTY LEVEL:	CALIFORNIA	SAN BERNARDINO COUNTY	BAKER
WHITE	2,059,640	119,090	91
BLACK OR AFRICAN AMERICAN	470,155	32,945	0
AMERICAN INDIAN AND ALASKA NATIVE	66,635	4,446	0
ASIAN	466,431	10,625	2
NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER	17,484	1,053	0
SOME OTHER RACE	1,345,522	78,424	68
TWO OR MORE RACES	280,263	16,829	4
HISPANIC OR LATINO	2,377,589	135,832	135

INCOME IN 1999 AT OR ABOVE POVERTY LEVEL:	CALIFORNIA	San BERNARDINO County	BAKER
WHITE	17,631,268	858,889	373
BLACK OR AFRICAN AMERICAN	1,628,071	110,439	4
AMERICAN INDIAN AND ALASKA NATIVE	237,070	13,970	10
ASIAN	3,167,811	67,310	5
NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER	93,879	3,782	0
SOME OTHER RACE	4,251,140	269,774	86
TWO OR MORE RACES	1,384,675	75,041	12
HISPANIC OR LATINO	8,365,369	520,102	308

Source: (USCB 2000)

3.4.3.3 Environmental Health and Safety of Children

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, mandates the protection of children from environmental health and safety risks (EO 13045). The ROI for this analysis is Baker, California. Table 3.3-3 lists the number of children residing at Baker.

Table 3.4-3: Population of Children at Baker by Age

AGE GROUP	POPULATION
UNDER 5 YEARS	62
5 TO 9 YEARS	94
10 TO 14 YEARS	47
15 TO 17 YEARS	35
TOTAL:	238

Source: (USCB 2000)

3.5 Noise

3.5.1 Definition of the Resource

Noise is usually defined as sound that is unwanted or undesirable because it interferes with speech communication and hearing or is otherwise annoying. Under certain conditions, noise may cause hearing loss, interfere with human activities, and in various ways may affect people's health and well-being. Noise is perhaps the most identifiable concern associated with aircraft operations. Although many other sources of noise are present in today's communities, aircraft noise is often singled out for special attention and criticism.

3.5.1.1 Representations of Noise

Noise is represented by a variety of quantities or “metrics.” Each noise metric was developed to account for the type of noise and the nature of what may be exposed to the noise. Human hearing is more sensitive to medium and high frequencies than to low and very high frequencies, so it is common to use “A-weighted” metrics, which account for this sensitivity. Impact of impulsive noise depends on factors other than human hearing, so it is often quantified by “C-weighted” metrics, which are flat over a broad frequency range.

Different time periods also play a role. People hear the sound that occurs at a given time, so it is intuitive to think of the instantaneous noise level, or perhaps the maximum level that occurs during an aircraft flyover. However, impact over a period of time depends on the total noise exposure over extended periods, so “cumulative” noise metrics are used to assess the impact of on-going activities such as those that occur in the Silver MOA. Within this EA, noise is described by the sound level (L), the maximum sound level (L_{\max}), the Sound Exposure Level (SEL), and Day-Night Average Sound Level (L_{dn}).

3.5.1.1.1 Sound Level

Sound level (L) is the amplitude of the sound that occurs at any given time. Some of the sounds are continuous or long term averages (e.g., garbage disposal, rural and urban ambient), and some are maximum levels (e.g., aircraft and truck pass-bys). Sound levels are measured in decibels (dB), and are reflected on a logarithmic scale. A 3-dB increase reflects a doubling in sound level. However, due to the way the human ear responds to noise, it actually requires about a 10-dB increase to be perceived as a doubling in noise. It should also be noted that an “instantaneous” level as used in environmental analysis usually represents sound averaged over some short time period, typically one second for slowly changing sounds and $\frac{1}{8}$ second for fast-changing sounds. When an aircraft flies by, the noise level changes continuously. It begins at the ambient (background) level, increases to a maximum as the aircraft passes closest to the receiver, then falls back to ambient as the aircraft recedes into the distance.

3.5.1.1.2 Maximum Sound Level

Maximum sound level (L_{\max}) is the highest instantaneous sound level measured during a single noise event, such as an aircraft overflight. The maximum sound level is important in judging whether a noise event will interfere with conversation, sleep, or other common activities.

3.5.1.1.3 Sound Exposure Level

While L_{\max} is commonly viewed as an indication of how intrusive a noise event is, impact also depends on how long a sound lasts. A sound that lasts a long time will be more intrusive than one that is over quickly. Sound Exposure Level (SEL) combines both of these characteristics (maximum sound and duration) into a single metric. Sound Exposure Level does not directly represent the sound level heard at any given time, but rather provides a measure of the total exposure of the entire event. For this reason, it is a better indicator of impact than just L_{\max} .

3.5.1.1.4 Day-Night Sound Average Level

Day-Night Sound Average Level (L_{dn}) is a composite metric combining the levels and duration of individual events, and the number of events that occur over an extended time period. Mathematically, it is a long-term average, but because it incorporates all noise events, it is referred to as a *cumulative* metric. It is computed over a specific period of time, commonly a year, to represent the total noise exposure. Because noise is more intrusive at night than during the day, sounds that occur after 10 P.M. and before 7 A.M. are adjusted by a 10-dB penalty.

Studies have shown that L_{dn} represents adverse effects of noise much more reliably than individual noise levels alone. As noted above for SEL versus L_{max} , L_{dn} is not the sound level heard at any given time, but is the best measure of long-term cumulative impact.

For military airspaces, there are two important variations of L_{dn} that account for special characteristics of military aircraft noise, described below.

3.5.1.2 Noise Modeling

Prediction of aircraft noise requires two elements. The first is a quantitative understanding of aircraft operations: numbers of aircraft, their speeds, altitudes, and locations. The second element is physical modeling of the noise itself, which is then accumulated over all operations. Paragraph 3.5.1.2.1 below describes operations on the range, from the perspective of noise analysis. Modeling of subsonic noise is described in paragraph 3.5.1.2.2.

3.5.1.2.1 Aircraft Operations

Air Warrior flight operations generally originate at Nellis AFB, Nevada. Air Warrior aircraft enter the Silver MOA and loiter there, awaiting permission/direction to enter the battle training area (restricted areas R-2502E and R-2502N). Once in the MOA, aircraft loiter between 200 ft AGL to 7,000 ft MSL, most preferably at the upper limits of the special use airspace. Aircraft depart the Silver MOA when they are cleared into the battle training area; they may return to the Silver MOA when leaving the battle training area. Aircraft may also transition between the Silver and Barstow MOAs. They may then reenter the Silver MOA while waiting for further direction or on their return to Nellis AFB. Supersonic flight activities are not authorized within the Silver MOA.

3.5.1.2.2 Subsonic Aircraft Noise Modeling

Within the Silver MOA flight often occurs randomly, or, due to either airspace configuration or training scenarios, it may be spatially concentrated, or channeled, into specific areas or corridors. Concentrated areas can include MTRs. The Air Force has developed the MOA Range NoiseMAP (MR_NMAP) computer program to calculate noise in these areas. The acoustic portion of the model is based on the Air Force's NoiseMAP technology, which is the standard method of analyzing military aircraft noise. The MR_NMAP is used to calculate noise for both random operations and operations channeled into corridors (Lucas and Calamia 1996).

3.5.2 Regulatory Setting

Noise control within the project area is governed by the *Quiet Communities Act of 1978* (42 USC § 4913).

3.5.3 Current Conditions

The little to no permanent population in this area limits the human noise receptors sensitive to military aircraft noise. The non-human receptors in the area away from I-15 are relatively unaffected by other ambient noise. High-flying commercial aircraft and commercial vehicular traffic on I-15 cause most non-military ambient noise in the area.

3.6 Safety

This section addresses safety factors associated with flight activities in and around the Silver MOA. Discussed in this section are military aircraft accident histories, civilian aircraft accident histories, and potential hazards to flight.

3.6.1 Regulatory Setting

The regulatory setting for air safety within MOAs comes under numerous regulatory and instructional sources. Samples of the various sources are: FAA Order 7110.65M, *Air Traffic Control* (FAA 1995); AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program* (USAF 1996) and Series 91 Safety Instructions; and Air Combat Command (ACC) Series 91 Safety Instructions and supplements to USAF Safety Instructions.

3.6.2 Current Conditions

The primary safety considerations affecting the current configuration of the Silver MOA are aircraft “spill-outs.” These spill-outs occur both in elevation (exceeding the altitude ceiling imposed on the MOA) and laterally when military aircraft exceed special use airspace boundaries and enter controlled airspace when transitioning between the Silver and Barstow MOAs. On NTC battle days, with the battle in the southeast area of R-2502E, up to approximately 5 percent of exercise aircraft may transition between the Silver and Barstow MOAs. On other days, when the battle is elsewhere in R-2502E/N, less than 1 percent of exercise aircraft may complete this transition (Nelson 2004). These inadvertent spill-outs place military aircraft in the NAS, which could lead to possible collision with civilian commercial and/or general aviation aircraft.

3.6.2.1 Military Aircraft Accident History

The Department of Defense categorizes aircraft mishaps into three classes (DOD 2000):

- ❖ Class A Mishap: Any accident incidental to flight, which results in the total cost of damages to government and other property in the amount of \$1 million or more; a DOD aircraft is destroyed; or an injury and/or occupational illness results in a fatality or permanent total disability.
- ❖ Class B Mishap: Any accident incidental to flight which results in the total cost of damage in the amount of \$200,000 or more, but less than \$1 million. An injury and/or occupational illness results in permanent partial disability; or when three or more personnel are hospitalized for inpatient care as a result of a single accident.

- ❖ **Class C Mishap:** Any accident incident to flight which results in the total cost of property damage is \$20,000 or more, but less than \$200,000; a nonfatal injury that causes any loss of time from work beyond the day or shift on which it occurred; or a nonfatal occupational illness or disability that causes loss of time from work or disability at any time.

There is no mishap data available for the Silver MOA; however, military aircraft accidents (Class A, B, and C mishaps) at Fort Irwin from 1999 to 2003 are listed in Table 3.5-1. During the period reported, there were six Class A, four Class B, and six Class C mishaps (a total of 16). All aircraft accidents involved military helicopters. None of the accidents reported involved civilian aircraft.

Table 3.6-1: Aircraft Accident History at Fort Irwin National Training Center, 1999 - 2003

DATE	TIME (LOCAL)	AIRCRAFT TYPES *	ACCIDENT CATEGORY **	MILITARY BASE AIRCRAFT ASSIGNED
13 Apr 99	1410	OH-58C	C	NTC
22 Aug 99	1230	OH-58D	B	Fort Polk LA
9 Feb 00	2229	UH-60L	A	Nat'l Guard
20 Feb 00	0300	UH-60L	C	NTC
23 Apr 00	1830	UH-60L	C	Fort Campbell KY
15 Aug 00	2347	OH-58C	A	NTC
21 Nov 00	1315	AH-64D	C	Fort Campbell KY
16 Jan 01	2050	UH-60L	A	Fort Hood TX
9 May 01	2125	OH-58A	A	NTC
24 Jun 01	0430	UH-60A	B	NTC
25 Oct 01	0610	OH-58D	B	Fort Bragg NC
24 Aug 02	0730	OH-58D	A	Fort Carson CO
28 Aug 02	2310	OH-58D	C	Fort Carson CO
29 Aug 02	0305	UH-60	A	Fort Carson CO
19 Jan 03	1439	CH-47	B	Fort Hood TX
7 Apr 03	1630	CH-47	C	Fort Hood TX

* UH, OH, CH, AH, JUH, MAH = Helicopter Aircraft.

** A = Class A mishap; B = Class B mishap; C = Class C mishap.

Source: G3 Aviation, National Training Center, Fort Irwin, California (as of 30 December 2002).

3.6.2.2 Civilian Aircraft Accident History

The FAA and the National Transportation Safety Board (NTSB) collect civil aircraft accident information for the U.S. The NTSB defines accidents as,

“ . . .the occurrences incident to flight in which, as a result of the operation of an aircraft, and person (occupant or non-occupant) received fatal or serious injury or any aircraft receives substantial damage (NTSB 1999).”

Substantial damage is defined as,

“Substantial damage or failure, which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and would normally require major repair or replacement of the affected component. Engine failure, damage limited to an engine, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered substantial damage (NTSB 1999).”

Serious injury as defined by the NTSB is “any injury which:

- ❖ Requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received;
- ❖ Results in a fracture of any bone (except simple fractures of fingers, toes, or nose);
- ❖ Involves lacerations which cause severe hemorrhages, nerve, muscle, or tendon damage;
- ❖ Involves injury to any internal organ; or
- ❖ Involves second or third-degree burns, or any burns affecting more than 5 percent of body surface.”

The civilian aircraft accident databases of the FAA and the NTSB were searched to identify all aircraft accidents associated with the Barstow-Daggett and Baker Airports, and for any near mid-air collisions within the Silver MOA vicinity from 1999 to 2003. The accident records found in these searches are summarized in Tables 3.6-2 and 3.6-3. None of these accidents/incidents involved military aircraft.

**Table 3.6-2: Aircraft Accident History at General Aviation
Airports in the Vicinity of the Silver MOA, 1999 - 2003**

AIRPORT/ ACCIDENT LOCATION*	DATE	AIRCRAFT AND DAMAGE	INJURIES	COMMENTS
OFF-FIELD LANDING 38 MILES EAST OF BARSTOW	19 Jun 99	Blanik L-13 (glider)	None	Forced landing
BARSTOW-DAGGETT	15 Sep 99	Cessna A185F Substantial	None	Hard landing

AIRPORT/ ACCIDENT LOCATION*	DATE	AIRCRAFT AND DAMAGE	INJURIES	COMMENTS
BAKER	8 Jun 00	Mooney M20D Substantial	None	Forced landing
BAKER	28 Apr 01	Motley Vans RV- 6A, Destroyed	1 – Fatal	Collided with terrain
BAKER	6 April 03	Piper PA-28-181 Substantial	2 – Minor	Forced landing

* 50 nautical mile radius of Fort Irwin, California.
Source: (NTSB 2003)

**Table 3.6-3: Near Mid-Air Collisions in the Vicinity of the
Silver MOA* 1999 - 2003**

DATE	AIRCRAFT TYPES		NEAREST CITY	CLOSEST SEPARATION (FT)	EVASIVE ACTION TAKEN
	No. 1	No. 2			
21 Jun 99	Navion-H (civilian)	Unknown or Unreported	Daggett	300	Yes

* Near mid-air collisions reported within approximately 50 nautical miles of Fort Irwin.
Source: (NASDAC 2004)

3.6.2.3 Potential Hazards to Flight

Bird Strikes

The FAA did an in depth study of the occurrences of wildlife (including bird) strikes to civilian aircraft in the U.S. from 1990 to 1999 (FAA 2000). The study analyzed 28,150 reports of wildlife strikes, including 20,893 in which the altitudes of the strikes were indicated. The FAA study found that 74.8 percent of strikes occurred under 600 ft AGL; 95.7 percent under 5,000 ft AGL; and 99 percent under 10,000 ft AGL. Ninety-six percent of bird strikes occurred during the takeoff/climb, and/or descent/approach/landing roll phases of flight.

Between 1990 and 1999, 2,516 known bird strikes were reported in California. This equated to almost 10 percent of all bird strikes reported for this period throughout the U.S., Puerto Rico, and the U.S. Virgin Islands. There is no further breakdown of this data to airport locations. National Transportation Safety Board aircraft accident data from 1999 to 2003 were searched to identify those accidents involving bird strikes (NTSB 2003). This database contained no accidents involving bird strikes in the Silver MOA area.

Nellis AFB maintains Bird-Aircraft Strike Hazardous (BASH) data for the aircraft operating from Nellis AFB. Records indicate that approximately 80 percent of reported BASH incidents have no specific location indicated—most BASH incidents were detected on post-flight aircraft inspections. For those incidents without specific locations indicated, pilots could only verify that the incident occurred sometime after takeoff and

before landing. A records search for the past 5 years revealed no BASH incidents within the Silver MOA (Bass 2004).

Obstacles

The following are potential obstacles to flight in the Silver MOA area that are noted on the Los Angeles Sectional Aeronautical Chart (USDOT 2003a):

- ❖ Major electrical transmission lines run almost the full length of the Silver MOA, near and approximately parallel to the R-2502E–Silver MOA boundary.
- ❖ Two mountain peaks lie within the Silver MOA. One located at approximately 35° 11' 30" N, 116° 14' 18" W is 3,661 ft MSL; the second is located at approximately 35° 17' 48" N, 116° 13' 48" W is 3,497 ft MSL.

The obstacles listed above may influence the flight location of VFR general aviation but generally they do not influence civilian jet aircraft operations in the area, which are generally flying at altitudes significantly above these obstacles.

3.7 Socioeconomics

3.7.1 Regulatory Setting

A central requirement of NEPA is to determine impacts, in advance, where actions of a federal agency may alter the ways in which people live, work, play, relate to one another, organize to meet their needs, and generally cope as members of society. Socioeconomic impacts must be evaluated where the federal government may take "actions significantly affecting the quality of the human environment" (42 USC § 4321 and USAF 2003b).

3.7.2 Current Conditions

This section describes the social and economic resources within the ROI that could be impacted by the proposed action. As this is an airspace action with no changes to land use, the socioeconomic resources are limited to commercial and general aviation using the affected airspace.

3.7.2.1 Commercial Aviation

Commercial aviation can operate under either VFR or IFR. In the terms of this report, commercial aviation is defined as those flights that operate above FL180 on IFR flight plans, under ATC radar control. As such, the horizontal and vertical boundaries of the Silver MOA have no current impact on commercial aviation, as those flights fly far above the current ceiling on the Silver MOA (7,000 ft MSL).

3.7.2.2 General Aviation

General aviation, both VFR and IFR, have been accustomed to the current airspace configuration since the Silver MOA (previously called the Baker MOA) was established in 1981. Theoretically, the Silver MOA should have no impact on VFR general aviation, as VFR traffic is able to use the MOA unrestricted on a joint-use, see-and-avoid basis. However, on a more practical basis, general aviation pilots tend to avoid MOAs (when active) rather than accept that element of risk. General aviation, flying on an IFR flight

plan, under ATC radar control, is vectored around MOAs (when active) to ensure proper aircraft separation.

All special use airspace imposes a certain level of inconvenience and added expense on general aviation. For MOAs, the inconveniences and added expenses apply to aircraft operating below FL180. The Silver MOA is currently capped at 7,000 ft MSL; therefore, these inconveniences and added expenses are considered minimal.

The FAA conducted a screen of their records of a typical Friday in August 2003, and concluded that approximately 40 VFR aircraft were tracked on V394, V21, V283, and V587 between Las Vegas and Los Angeles. General aviation traffic using VFR is not normally tracked on ATC radars so an actual count was not possible. The radar tracks for these flights can be seen at Figure 3.2-4.

The FAA conducted a screen of their records of a typical Thursday in March 2004, which revealed that a total of approximately 34 IFR aircraft were tracked on J60, J100, J107, and J146 between Las Vegas and Los Angeles below 11,000 ft MSL (Table 3.2-4). The radar tracks on these flights can be seen at Figure 3.2-6. General aviation activity is included if it is operating under IFR, or if VFR and ATC is providing advisory services.

4. Environmental Consequences

4.1 Air Quality

Significant air quality impacts are defined as those that cause, or contribute to, an exceedance of a federal and/or state ambient air quality standard. The MDAQMD has established daily and annual threshold levels to attain or prevent exceedance of federal and state ambient air quality standards. Impacts to the MDAQMD Air Basin are far below *de minimus* levels and will not impact the air basin. Minor changes in the amount of emissions of criteria pollutants would occur as a result of the proposed action. Changes in use would be the same for the Proposed Action and two alternatives.

As explained in paragraph 3.6.2, the number of exercise aircraft that may transition between the Silver and Barstow MOAs is between 1 and 5 percent. For the purposes of air quality analysis, the USAF has assumed a homogenous distribution of aircraft throughout the study area. Under the Proposed Action, the study area (Silver South MOA and the southern portion of the Silver North MOA) makes up approximately 8 percent of the total special use airspace. Approximately 41 percent of the study area airspace lies below the mixing altitude. The multiplication factor for pollutants generated in the study area is .0328.

For Alternative 1, the study area makes up approximately 14 percent of the new Silver MOA. Approximately 36 percent of the study area airspace lies below the mixing altitude. The multiplication factor for pollutants generated in the study area is .05.

Methodology

The primary Air Warrior aircraft that use the Silver MOA on a regular basis are the A-10 and F-16. The projected mix of aircraft using the Silver MOA in support of Air Warrior activity is expected to remain the same as current (i.e., approximately 80 percent A-10s, 10 percent F-16s, and 10 percent other) (Dydyk 2004). For the purpose of the air quality analysis, we assumed 80 percent A-10s and 20 percent F-16s.

The worst-case utilization expected for the Silver MOA is expected to be 3,000 sorties annually. For air quality calculations, the 3,000 annual sortie estimate is used. Each sortie was projected to be in the Silver MOA airspace for a total of 120 minutes. The power setting for the two A-10, TF-34-GE-100 engines and the one F-16, F-110-GE-100 engine were assumed to be at the "intermediate" level. And lastly, we also assumed a homogenous distribution of aircraft throughout the study area—for the Proposed Action, sorties were distributed between the Silver North and Silver South MOAs based on the proportion of the total area—for Alternative I, sorties were distributed evenly throughout the entire area.

Table 4.1-1: Aircraft Engine Emission Data

AIRCRAFT ENGINES	EMISSIONS IN LBS OF POLLUTANTS PER 120-MINUTE SORTIE			
	NITROGEN DIOXIDE (NO ₂)	CARBON MONOXIDE (CO)	VOC ^A	PARTICULATE MATTER (PM ₁₀) ^B
TF34-GE-100 (A-10) ^C	25.30	24.76	2.56	35.20
F110-GE-100 (F-16)	155.83	18.78	1.62	4.87

A = VOC emission factors are based on values for total hydrocarbons

B = Includes both filterable and condensable PM₁₀

C = Pollutant amounts represent two engines

Source: (USAF 2002b)

4.1.1 Proposed Action

The Proposed Action proposes to change the Silver MOA airspace configuration and its use. The configuration changes are analyzed in the Section 3.2, Airspace (Figure 2-1). The proposed change affecting air quality is the increase in the Silver North MOA altitude. The Proposed Action proposes to change the Silver North MOA altitude from 7,000 ft MSL to 9,000 ft MSL. Most military aircraft that would use the Silver North MOA would operate at the upper limit of the MOA. The mean average mixing altitude is approximately 5,610 ft MSL (paragraph 3.1.3.1). This change would increase the buffer in which military would operate above the mixing altitude by 2,000 feet.

The Proposed Action also proposes to expand the Silver North MOA to the southwest and establish the Silver South MOA. The altitude floor and ceiling of Silver South MOA would be 200 ft AGL to 7,000 ft MSL. This new MOA would be used primarily for military aircraft to transition between the Silver North and Barstow MOAs. The aircraft using the Silver South MOA would most probably operate at the upper limit of the MOA, approximately 1,400 feet above the mixing altitude. Table 4.1-2 below depicts the emissions that are estimated to occur below the mixing altitude within the study area each year. When compared with the annual allowable emissions in Table 3.1-2, the new estimated emissions within the study area are well below *de minimus* levels.

Table 4.1-2: Estimated Emissions Per Year (Proposed Action)

AIRCRAFT SORTIES	EMISSIONS IN TONS OF POLLUTANTS PER YEAR			
	NITROGEN DIOXIDE (NO ₂)	CARBON MONOXIDE (CO)	VOC ^A	PARTICULATE MATTER (PM ₁₀)
A-10 (2,400 SORTIES/YR)	.99	.97	.1	1.38
F-16 (600 SORTIES/YR)	1.53	.18	.02	.05
TOTAL EMISSIONS PER YEAR	2.52	1.15	.12	1.43

A = VOC emission factors are based on values for total hydrocarbons

Source: (USAF 2002b)

4.1.2 Alternative 1

Alternative 1 proposes to change the Silver MOA airspace configuration and its use. The configuration changes are analyzed in the Section 3.2, Airspace (Figure 2-2). The proposed change affecting air quality is the increase in the Silver MOA altitude. Alternative 1 proposes to change the Silver MOA altitude from 7,000 ft MSL to 10,000 ft MSL. Most military aircraft that would use the Silver MOA would operate at the upper limit of the MOA. The mean average mixing altitude is approximately 5,610 ft MSL (paragraph 3.1.3.1). This change would increase the buffer in which military would operate above the mixing altitude by 3,000 feet.

Alternative 1 also proposes to expand the Silver MOA to the south, connecting it with the Barstow MOA. The altitude floor and ceiling of the expanded Silver MOA would be 200 ft AGL to 10,000 ft MSL. The aircraft using this new Silver MOA airspace would most probably operate at the upper limit of the MOA, well above the mixing altitude. Table 4.1-3 below depicts the emissions that are estimated to occur below the mixing altitude within the study area each year. When compared with the annual allowable emissions in Table 3.1-2, the new estimated emissions within the study area are well below *de minimus* levels.

Table 4.1-3: Estimated Emissions Per Year (Alternative 1)

AIRCRAFT SORTIES	EMISSIONS IN TONS OF POLLUTANTS PER YEAR			
	NITROGEN DIOXIDE (NO ₂)	CARBON MONOXIDE (CO)	VOC ^A	PARTICULATE MATTER (PM ₁₀)
A-10 (2,400 SORTIES/YR)	1.52	1.49	.15	2.11
F-16 (600 SORTIES/YR)	.24	.28	.02	.07
TOTAL EMISSIONS PER YEAR	1.76	1.77	.17	2.18

A = VOC emission factors are based on values for total hydrocarbons
Source: (USAF 2002b)

4.1.3 No Action Alternative

Under the No Action Alternative, no changes would occur to existing air quality and therefore, there would be no additional adverse impacts on air quality as a result of selecting this alternative (Figure 2-3).

4.2 Airspace

This section describes the potential impacts of changing the Silver MOA's lateral and vertical boundaries and changing the MOA's use as described in Chapter 2. The significant criteria in this section are unmitigated negative impacts on the NAS.

4.2.1 Airspace Use

4.2.1.1 Aircraft

The most recent environmental assessment of the Silver MOA was published in 1981 when it was first established as the Baker MOA (USAF 1981). At that time the only military aircraft assessed for use in the Silver MOA was the F-4G Wild Weasel. When the MOA was transferred from George AFB, California to Nellis AFB, Nevada and its name changed from the Baker to Silver MOA, its use was "grandfathered." The Air Force retired F-4G aircraft at about the same time that George AFB was closed. Today the Air Force uses many more aircraft types to support the Air Warrior program. The following Air Force and Navy/Marine Corps aircraft have at one time or another used the Silver MOA:

A-10	CH-47	F-16
AV-8B	E-8B	F-18
B-1	EC/KC-130	T-38
B-2	F-15	MH-60

The projected mix of aircraft using the Silver MOA in support of Air Warrior activity is expected to remain the same as current (i.e., approximately 80 percent A-10s, 10 percent F-16s, and 10 percent other) (Dydyk 2004).

4.2.1.2 Sortie Rates

The environmental assessment referenced above (USAF 1981) assessed the Baker MOA for an average of 16 (F-4) sorties per day for 228 days per year (a total of approximately 3,650 sorties per year). The peak assessment was for 32 sorties per day (based on four aircraft operating for 30-minute periods, for a total of 4 hours per day); however, the number of peak periods per year was not quantified.

The current sortie rate for the Silver MOA is approximately 2,500 sorties (Table 3.2-1). Real-world conditions and situations (Afghanistan, Iraq, etc.) could affect future aircraft use of the Silver MOA by as much as ± 20 percent. Based on this possible fluctuation, yearly sortie rates could be as low as 2,000 to as high as 3,000.

On NTC battle days, with the battle in the southeast area of R-2502E, up to approximately 5 percent of exercise aircraft may transition between the Silver and Barstow MOAs; using a high estimate of 3,000 total sorties, approximately 150 aircraft would make this transition. On other days, when the battle is elsewhere in R-2502E/N, less than 1 percent of exercise aircraft may complete this transition; using a high estimate of 3,000 total sorties, approximately 30 aircraft would make this transition (Nelson 2004).

4.2.2 Proposed Action

The Proposed Action proposes to change the Silver MOA in size and altitude. As depicted in Figure 2-1, the Silver MOA would be reconfigured, reducing its size in the southeast and increasing its size in the southwest. These changes would result in a net reduction of special use airspace of approximately 215 square miles. The airspace no longer needed would be returned to the NAS. Once the new special use airspace boundaries were reconfigured, the new airspace would be divided into two parts: Silver North MOA and Silver South MOA. The Silver North MOA would have an altitude ceiling of 9,000 ft MSL and Silver South MOA have an altitude ceiling of 7,000 ft MSL—both MOAs would have an altitude floor of 200 ft AGL.

4.2.2.1 Impact on NTC/Air Warrior Operations

Under the Proposed Action, Air Warrior aircrews would be allowed to operate an additional 2,000 feet in altitude up to 9,000 ft MSL. This would allow Air Warrior aircrews to operate under more realistic conditions by allowing them to execute more realistic, high fidelity combat training. The new configured airspace would allow aircrews to practice in the full spectrum of offensive and defensive weapons employment, tactics, and countermeasures. Likewise, aircrews that are tasked to simulate an adversary's tactics, weapons employment, and countermeasures would no longer need to alter their efforts due to the current airspace constraints. Additionally, the Proposed Action would eliminate airspace spill-outs when aircraft transition between the Silver and Barstow MOAs. The impacts that the Proposed Action would impose on NTC/Air Warrior operations are considered positive.

4.2.2.2 Impact on Non-Participating Military Operations

Military Training Routes/AFFTC Low-Level Route

Under the Proposed Action, all MTRs and the AFFTC Low-Level route in the vicinity of the Silver MOA, which fly through the current MOA would continue to fly through a portion of the new Silver North and South MOAs (Figure 4.2-1). There would be virtually no changes to VR-1214, 1215 and the AFFTC B-1B Low-Level route. Aircraft using VR-1218 would be within Silver South MOA for about the same amount of time that they now fly in the current Silver MOA. Aircraft using IR-212 would enter Silver North MOA; however, they would spend less time within the new MOA as they currently do. The impacts that the Proposed Action would impose on non-participating military operations are considered to be less than significant.

4.2.2.3 Impact on Non-Military Airspace Use

Visual Flight Rules Traffic

The impacts of the Proposed Action would impose on non-military air traffic would be positive and negative (Figure 4.2-2). The positive impacts would result from returning the special use airspace to the southeast I-15 back to the NAS. Military Operations Areas are joint use airspace, which allow non-military aircraft to use the airspace on a see-and-avoid basis; however, most general aviation, VFR pilots purposely avoid flying within MOAs (when active). By returning the southeast portion of the Silver MOA back to the NAS, general aviation pilots flying on V587, V283, and V21 could use this airspace more freely. The negative impact imposed by the Proposed Action would be the reduction of VFR airspace above the Silver North MOA. This airspace would

decrease by 2,000 feet (current VFR airspace over the Silver MOA is between 7,500 ft MSL, to but not including 18,000 ft MSL; new VFR airspace over the Silver North MOA would be between 9,500 ft MSL (for standard VFR separation), to but not including 18,000 ft MSL). Visual Flight Rules traffic flying on V394 would need to fly above 9,000 ft MSL if they chose to avoid the MOA airspace. However, on this leg of V394, VFR aircraft must fly at or above 12,000 ft MSL to be at or above the Minimum Enroute Altitude (MEA), and at or above 9,500 ft MSL to be at or above the Minimum Obstruction Clearance Altitude (MOCA) (USDOT 2003b).

The Silver South MOA altitude ceiling would be established at 7,000 ft MSL so as not to impact the arrival and departure traffic into and out of the Barstow-Daggett Airport. The impacts that the Proposed Action would impose on VFR commercial and general aviation traffic are considered to be less than significant.

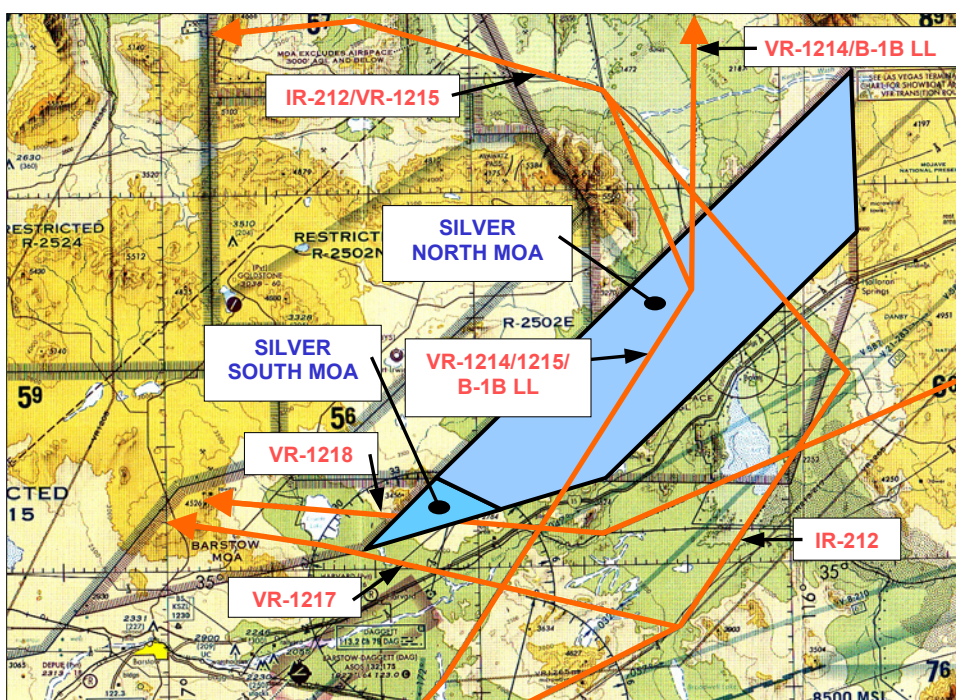


Figure 4.2-1: Military Training Routes/AFFTC Low-Level Route in the Vicinity of the Proposed Action

Source: (USDOT 2003a, DOD 2003, AFFTC 2000)

Instrument Flight Rules Traffic

Air traffic flying IFR normally cruise above 18,000 ft MSL (FL180) (Figure 4.2-3). The changes considered under the Proposed Action are below 9,000 ft MSL. According to FAA data of a typical travel day, approximately 13 flights per day would be affected by this change and forced to fly at altitudes above 9,000 ft MSL (Table 3.2-5). However, on these legs of J9-100-146, IFR aircraft flying below 18,000 ft MSL must fly at or above 12,000 ft MSL to be at or above the MEA, and at or above 9,500 ft MSL to be at or above the MOCA (USDOT 2003b). The impacts that this alternative would impose on

IFR commercial and/or general aviation traffic and the NAS are considered less than significant.

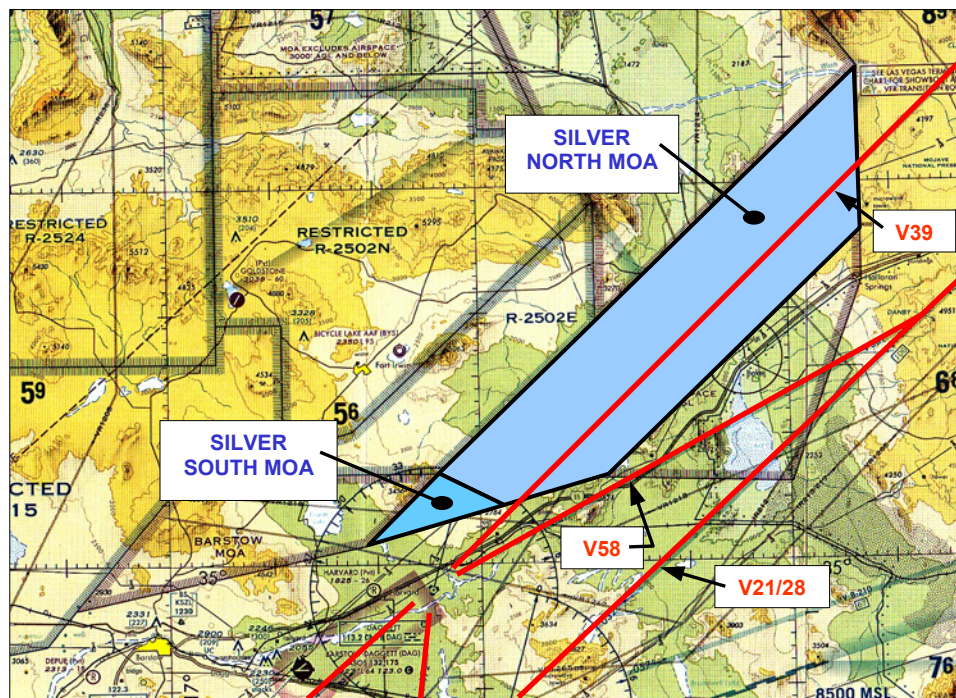


Figure 4.2-2: Low Altitude Airways in the Vicinity of the Proposed Action

Source: (USDOT 2003a)

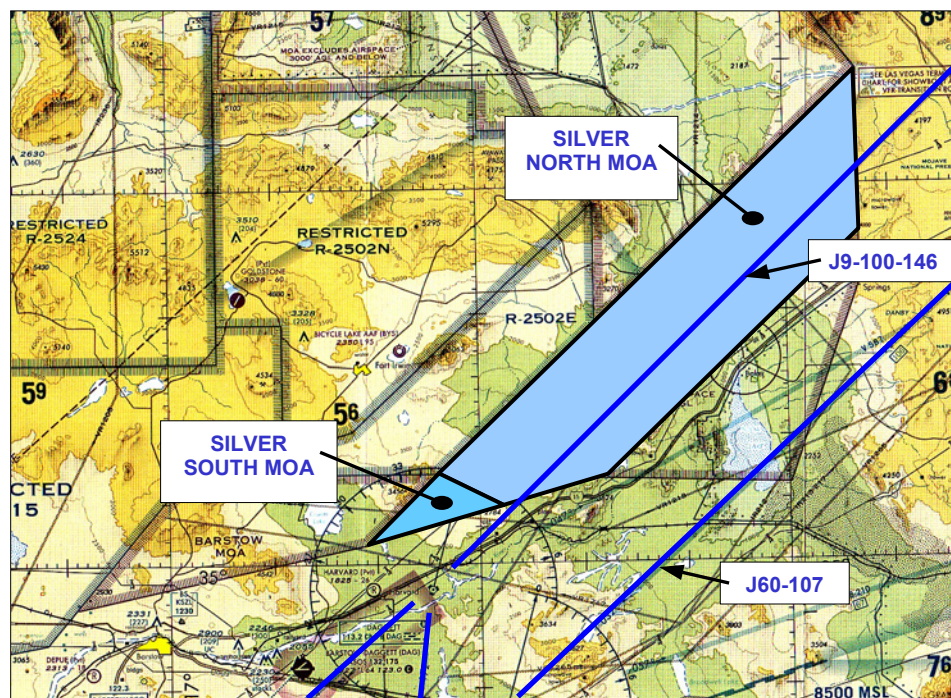


Figure 4.2-3: High Altitude Airways in the Vicinity of the Proposed Action

Source: (USDOT 2003a)

4.2.3 Alternative 1

Alternative 1 proposes to increase the size and altitude ceiling of the Silver MOA. As depicted in Figure 2-2, the Silver MOA would increase by approximately 110 square miles. Under this alternative, no special use airspace would be returned to the NAS. The new Silver MOA would be increased in altitude to 10,000 ft MSL—the MOA would retain its altitude floor of 200 ft AGL.

4.2.3.1 Impact on NTC/Air Warrior Operations

Under Alternative 1, Air Warrior aircrews would be allowed to operate an additional 3,000 feet in altitude up to 10,000 ft MSL. This would allow Air Warrior aircrews to operate under more realistic conditions by allowing them to execute more realistic, high fidelity combat training. The new configured airspace would allow aircrews to practice in the full spectrum of offensive and defensive weapons employment, tactics, and countermeasures. Likewise, aircrews that are tasked simulate an adversary's tactics, weapons employment, and countermeasures would no longer need to alter their efforts due to the current airspace constraints. Additionally, Alternative 1 would eliminate airspace spill-outs when aircraft transition between the Silver and Barstow MOAs. The impacts that Alternative 1 would impose on NTC/Air Warrior operations are considered positive.

4.2.3.2 Impact on Non- Participating Military Operations

Military Training Routes/AFFTC Low Level Route

Under Alternative 1, all MTRs and the AFFTC B-1B Low-Level route in the vicinity of the Silver MOA, which currently fly through the current MOA, would continue to fly through the new Silver MOA (Figure 4.2-4). There would be virtually no changes to IR-212. Aircraft using VR-1214, 1215, 1218, and the AFFTC B-1B Low-Level route would spend more time in the new Silver MOA over that of the current MOA. The impacts that Alternative 1 would impose on non-participating military operations are considered less than significant.

4.2.3.3 Impact on Non-Military Airspace Use

Visual Flight Rules Traffic

Alternative 1 would reduce the VFR airspace above the new Silver MOA by 3,000 feet (current VFR airspace over the Silver MOA is between 7,000 ft MSL, to but not including 18,000 ft MSL; new VFR airspace over the Silver MOA would be between 10,000 ft MSL to but not including 18,000 ft MSL) (Figure 4.2-5). Air traffic flying VFR on V587, V394 V283, and V21 would need to fly 3,000 feet higher (i.e., above 10,000 ft MSL) if they chose to avoid the new MOA airspace. However, on this leg of V394, VFR aircraft must fly at or above 12,000 ft MSL to be at or above the MEA, and at or above 9,500 ft MSL to be at or above the MOCA; VFR aircraft on these legs of V587, V283, and V21 must fly at or above 10,000 ft MSL to be at or above the MEA (USDOT 2003b).

This altitude ceiling increase could also impact the arrival and departure traffic into and out of the Barstow-Daggett Airport. The impacts that Alternative 1 would impose on VFR commercial and/or general aviation traffic, and the NAS may be considered significant; if this alternative were selected, the USAF and FAA would need to develop mitigation measures to reduce the impacts.

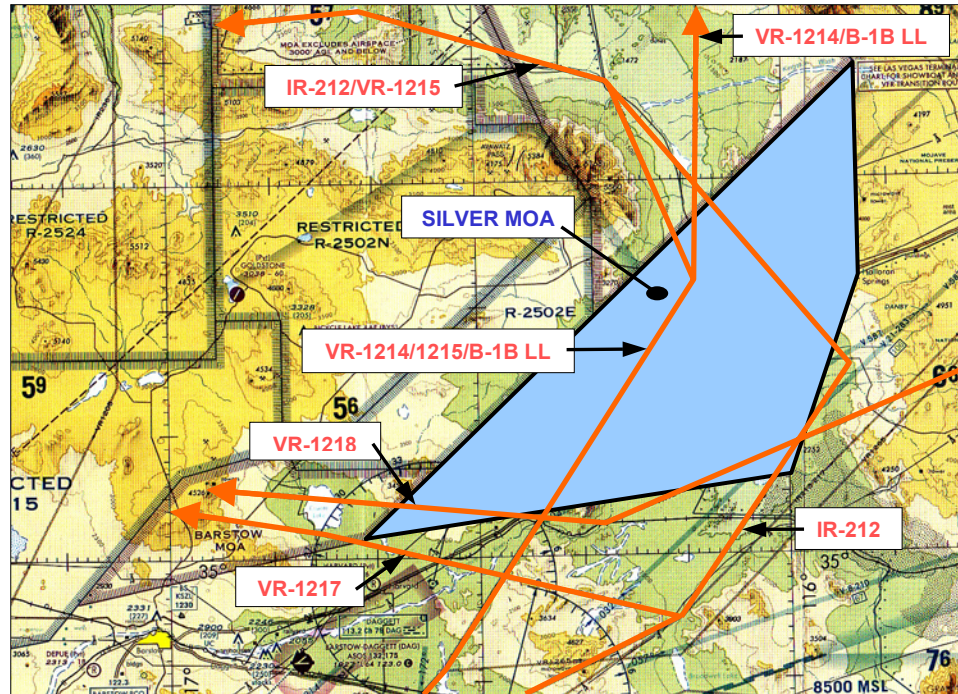


Figure 4.2-4: Military Training Routes/AFFTC Low-Level Route in the Vicinity of Alternative 1

Source: (USDOT 2003a, DOD 2003, AFFTC 2000)

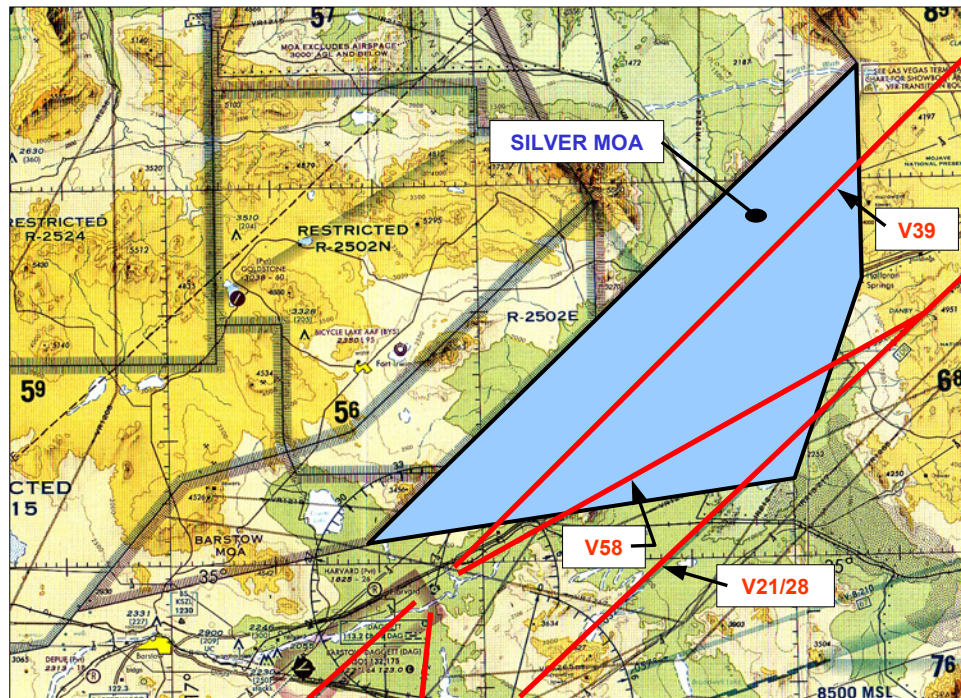


Figure 4.2-5: Low Altitude Airways in the Vicinity of Alternative 1

Source: (USDOT 2003a)

Instrument Flight Rules Traffic

Air traffic flying IFR normally cruise above 18,000 ft MSL (FL180) (Figure 4.2-6). The changes considered under Alternative 1 are below 10,000 ft MSL. According to FAA data of a typical travel day, approximately 31 flights per day would be affected by this change and forced to fly at altitudes above 10,000 ft MSL (Table 3.2-5). However, on these legs of J9-100-146, IFR aircraft flying below 18,000 ft MSL must fly at or above 12,000 ft MSL to be at or above the MEA; IFR aircraft flying on J60-107 below 18,000 ft MSL must fly at or above 10,000 ft MSL to be at or above the MEA (USDOT 2003b). The impacts that this alternative would impose on IFR commercial and/or general aviation traffic and the NAS are considered less than significant.

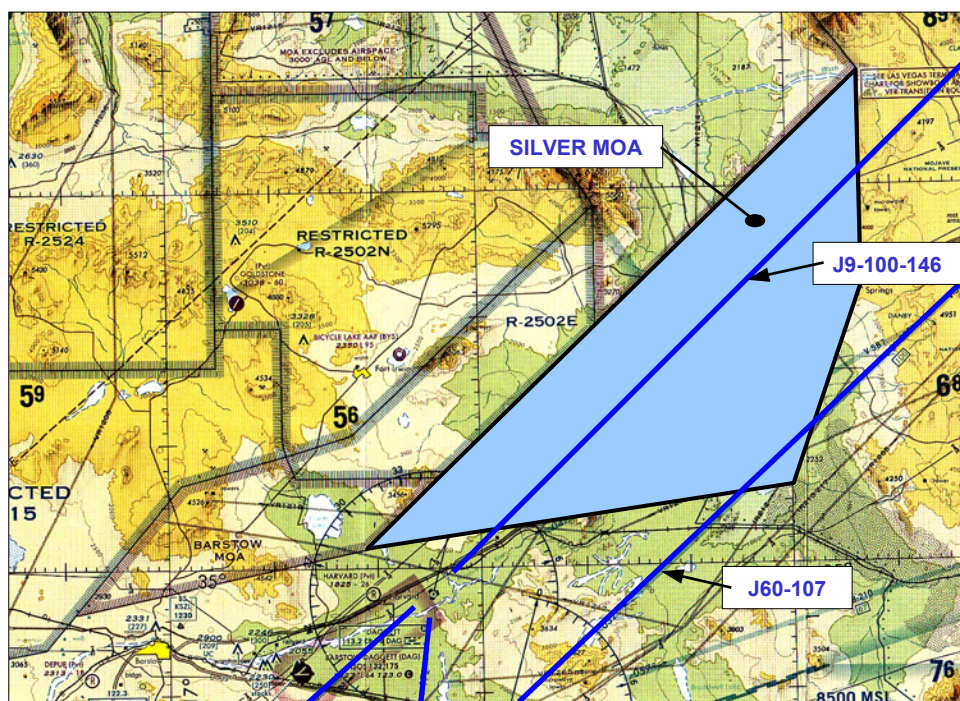


Figure 4.2-6: High Altitude Airways in the Vicinity of Alternative 1

Source: (USDOT 2003a)

4.2.4 No Action Alternative

Under the No Action Alternative (Figure 2-3), no airspace changes would occur—the Silver MOA would retain its current boundaries and altitudes (i.e., 200 ft AGL floor and 7,000 ft MSL ceiling).

4.2.4.1 Impact on NTC/Air Warrior Operations

Under the No Action Alternative, the operational constraints that currently exist would continue. Air Warrior aircrews would continue to operate under unrealistic altitude ceiling constraints that do not allow them execute realistic, high fidelity combat training. The current airspace configuration would continue to hamper aircrews attempting to

practice in the full spectrum of offensive and defensive weapons employment, tactics, and countermeasures. Likewise, aircrews that are tasked simulate an adversary's tactics, weapons employment, and countermeasures would continue to alter their efforts due to the current airspace constraints. Additionally, the No Action Alternative would perpetuate airspace spill-outs when aircraft transition between the Silver and Barstow MOAs.

4.2.4.2 Impact on Non-Participating Military Operations

Military Training Routes/AFFTC Low-Level Route

Under the No Action Alternative, there would be no change to current conditions involving MTR/AFFTC Low-Level scheduling and flight operations (Figure 3.1-2).

4.2.4.3 Impact on Non-Military Airspace Use

Visual Flight Rules Traffic

Under the No Action Alternative, there would be no change to current conditions involving VFR commercial and/or general aviation operations (Figure 3.2-1).

Instrument Flight Rules Traffic

Under the No Action Alternative, there would be no change to current conditions involving IFR commercial and/or general aviation operations (Figure 3.2-2).

4.3 Biological Resources

4.3.1 Proposed Action

4.3.1.1 Threatened, Endangered, and Sensitive Species

The Proposed Action considered in this airspace project would have no ground disturbing elements. The changes proposed to the existing Silver MOA are to extend the altitude ceiling from 7,000 ft MSL to 9,000 ft MSL. Under the Proposed Action the MOA floor would remain at 200 ft AGL. The flight activities conducted within the Proposed Action are very similar to the flight activities conducted under the preceding environmental assessment used to establish the MOA (USAF 1981); however, the activities considered under this proposal are estimated to have even fewer environmental impacts to native animal species because the aircraft would most probably be using the higher altitudes, 2,000 feet higher than they currently operate.

The Proposed Action also proposes to expand the special use airspace to connect the existing Silver and Barstow MOAs. The Proposed Action could impact bald eagles that may be flying above 200 ft AGL. The number of Air Warrior aircraft that would use the Silver South MOA to transit to and from the Barstow MOA are very low (Paragraph 4.2.1.2), and those that do would most probably be transiting at or near 7,000 ft MSL.

Nellis AFB maintains BASH data for the aircraft operating out of Nellis AFB. Records indicate that approximately 80 percent of reported BASH incidents have no specific location indicated. Most BASH incidents were detected on post-flight aircraft inspections. For those incidents without specific locations indicated, pilots could only verify that the incident occurred sometime after takeoff and before landing. A records

search for the past 5 years revealed no BASH incidents within the Silver MOA (Bass 2004). This being the case, the changes of a bird strike are very remote.

The potential impacts to federal and state listed threatened, endangered, and sensitive species were examined in this new area and found to have no additional environmental effects.

4.3.1.2 *Migratory Birds and Raptors*

The impacts on migratory birds and raptors under the Proposed Action are the same as those discussed above in paragraph 4.3.1.1, Threatened, Endangered, and Sensitive Species.

4.3.2 *Alternative 1*

4.3.2.1 *Threatened, Endangered, and Sensitive Species*

Alternative 1 would have no ground disturbing elements. The changes proposed to the existing Silver MOA are to extend the altitude ceiling from 7,000 ft MSL to 10,000 ft MSL. Under Alternatives 1, the MOA floor would remain at 200 ft AGL. The flight activities conducted under Alternative 1 would be very similar to the flight activities conducted under the preceding environmental assessment used to establish the MOA (USAF 1981). Flight activities under this alternative are estimated to have even fewer environmental impacts to native animal species because the aircraft would most probably be using the higher altitudes, 3,000 feet higher than they currently operate.

Alternative 1 also proposes to expand the special use airspace to connect the existing Silver and Barstow MOAs. Alternative 1 could impact bald eagles that may be flying above 200 ft AGL. The number of Air Warrior aircraft that would use this new special use airspace to transit to and from the Barstow MOA is very low (Paragraph 4.2.1.2), and those that do would most likely be transiting at or near 10,000 ft MSL.

Nellis AFB maintains BASH data for the aircraft operating out of Nellis AFB. Records indicate that approximately 80 percent of reported BASH incidents have no specific location indicated. Most BASH incidents were detected on post-flight aircraft inspections. For those incidents without specific locations indicated, pilots could only verify that the incident occurred sometime after takeoff and before landing. A records search for the past 5 years revealed no BASH incidents within the Silver MOA (Bass 2004). This being the case, the changes of a bird strike are very remote.

The potential impacts to federal and state listed threatened, endangered, and sensitive species were examined in this new area and found to have no additional environmental effects.

4.3.2.2 *Migratory Birds and Raptors*

The impacts on migratory birds and raptors under Alternative 1 are the same as those discussed above in paragraph 4.3.2.1, Threatened, Endangered, and Sensitive Species.

4.3.3 No Action Alternative

Under the No Action Alternative, no changes to the current airspace configuration would occur, and therefore there would be no additional impacts to threatened, endangered, and sensitive species, and/or migratory birds and raptors.

4.4 Environmental Justice

In accordance with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (EO 12898), and EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (EO 13045) the USAF is required to identify and address disproportionately high and adverse human health and environmental effects of federal programs, policies, and activities on minority and low-income populations, and children. The criteria in this section are those changes that have a significant negative impact on any minority and/or low-income populations, and children. The ROI established for this airspace action encompass primarily Baker, California.

4.4.1 Proposed Action

Minority populations of Baker are 9 percent smaller than the overall minority populations of the county and state (Paragraph 3.4.3.1). Low-income individuals comprise a 10-13 percent greater portion of Baker's population as compared with the overall low-income populations of the county and state (Paragraph 3.4.3.2). The Proposed Action involves changes to the airspace above 7,000 ft MSL—there are no changes proposed to the airspace over populated areas or ground disturbing activities. Furthermore, the new airspace boundaries proposed by the Proposed Action exclude the town of Baker; therefore, there would be no new adverse impacts to either minority or low-income populations, and children.

4.4.2 Alternative 1

The impacts to minority populations and low-income individuals under Alternative 1 are the same as those discussed above in paragraph 4.4.1.

4.4.3 No Action Alternative

Under the No Action Alternative, no changes would occur to existing airspace and therefore, there would be no new adverse impacts to minority or low-income populations, and children as a result of selecting this alternative.

4.5 Noise

Within the Silver MOA, flight often occurs randomly, or, due to either airspace configuration or training scenarios, it may be spatially concentrated, or channeled, into specific areas or corridors. Concentrated areas can include MTRs. For the purposes of noise analysis, the USAF has assumed a homogenous distribution of aircraft throughout the proposed MOAs and study area.

The Air Force developed the MOA Range NoiseMAP (MR_NMAP) computer program to calculate noise in these areas. The acoustic portion of the model is based on the Air Force's NoiseMAP technology, which is the standard method of analyzing military

aircraft noise. This computer program can calculate noise for both random operations and operations channeled into corridors (Lucas and Calamia 1996).

Methodology

The primary Air Warrior aircraft that use the Silver MOA on a regular basis are the A-10 and F-16. The projected mix of aircraft using the Silver MOA in support of Air Warrior activity is expected to remain the same as current (i.e., approximately 80 percent (2400 sorties) A-10s, 10 percent (300 sorties) F-16s, and 10 percent (300 sorties) other) (Dydyk 2004).

For noise calculation purposes, the following assumptions were made. The worst-case utilization was estimated to be 3,000 sorties annually, of which 2,400 were A-10 sorties and 600 F-16 sorties (the 300 “other” sorties were assumed to have an average noise level of an F-16 for calculation purposes). Each sortie was projected to be in the Silver MOA airspace for a total of 120 minutes. The power setting for the two A-10, TF-34-GE-100 engines and the one F-16, F-110-GE-100 engine were assumed to be at the “intermediate” level. Aircraft distribution between day and night sorties was estimated to remain at the current proportion of 95 percent day and 5 percent night. Lastly, a homogenous distribution of aircraft throughout the study area was used—for the Proposed Action, sorties were distributed between the Silver North and Silver South MOAs based on the proportion of the total area—for Alternative I, sorties were distributed evenly throughout the entire area.

4.5.1 Proposed Action

The Proposed Action proposes to change the boundaries of the Silver MOA, creating a Silver North and South MOA. The proposed changes to the numbers and types of aircraft participating in future combat training activities within the Silver North/South MOAs are explained in Section 4.2, Airspace.

The primary human noise receptor within the project area is the town of Baker. Aircraft flying within the Silver North MOA are prohibited from flying lower than 3,000 ft AGL within 3 nautical miles of the center of Baker. The new proposed airspace boundary would put the center of Baker approximately 1 nautical mile outside the proposed Silver MOA North airspace.

The Proposed Action also proposes to create new special use airspace to the south of the current Silver MOA connecting it to the Barstow MOA. A portion of this new special use airspace makes up the Silver South MOA. The altitude ceiling of Silver South MOA would be 7,000 ft MSL. Aircraft transitioning to and from the Barstow through the Silver South MOA would most likely be flying at the upper level of the MOA. The noise impacts on any human or biological resources in this new area would be less than those currently imposed in the current Silver MOA. Though only 1 to 5 percent of Air Warrior aircraft would be transitioning between the two MOAs, for the purpose of the noise analysis, we assumed a homogenous distribution of the 3,000 sorties throughout the study area.

The Proposed Action also returns a portion of the current special use airspace, that area primarily west of Interstate-15, back to the NAS. A good portion of this area lies above the Mojave National Preserve. This would have a positive impact by eliminating the

special use airspace that currently overlays this preserve and would eliminate any military aircraft noise generated as a result of its use.

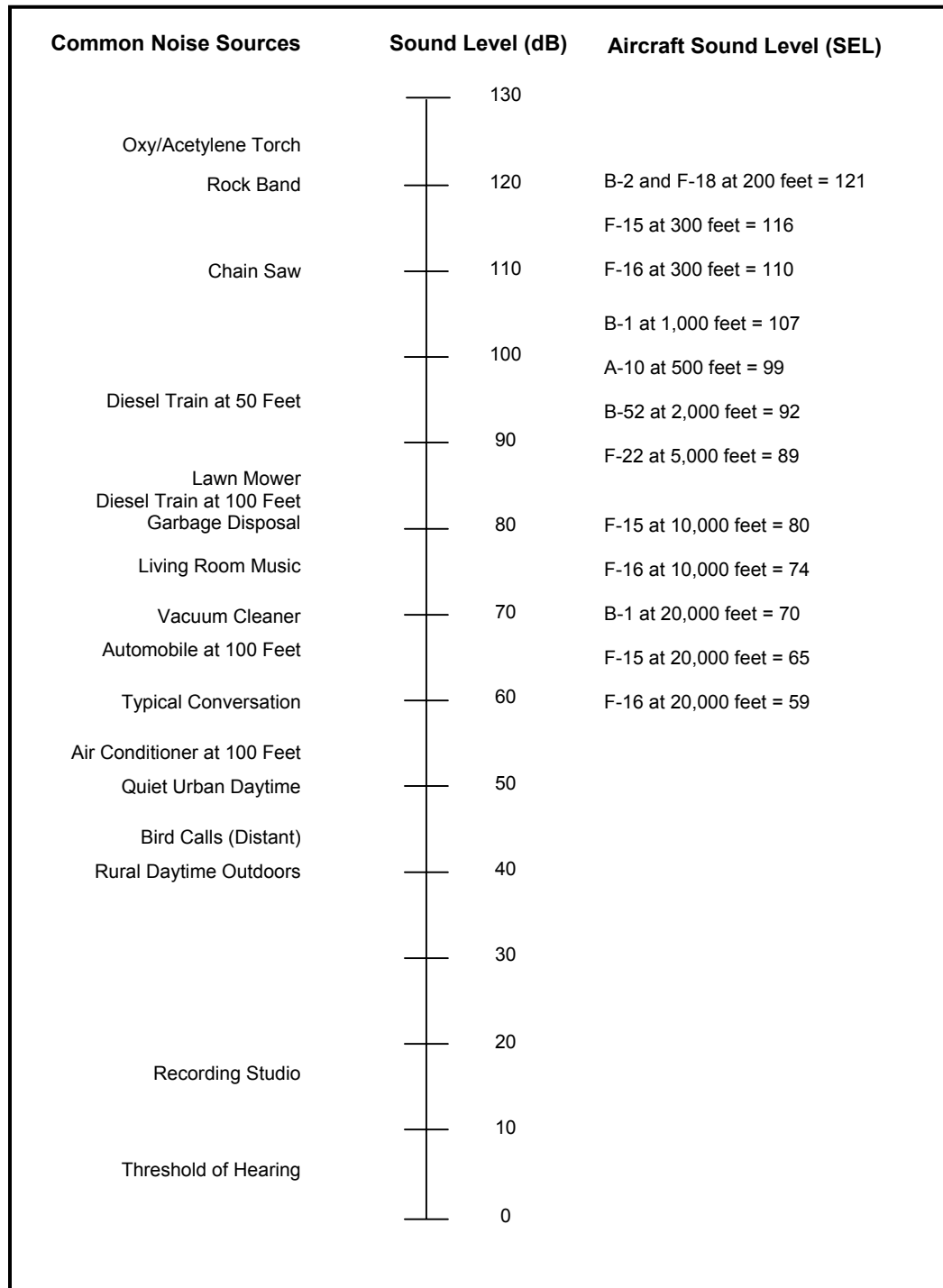


Figure 4.4-1: Typical A-Weighted Sound Levels of Common sounds

Source: Adapted from *Handbook of Noise Control*, C.M. Harris, editor, McGraw-Hill Book Co., 1979

Analysis. For the Silver North MOA, the estimated L_{dn} was computed to be 55.3 dB. For the Silver South MOA, the estimated L_{dn} was computed to be 56.5 dB. The noise impacts as a result of selecting the Proposed Action are considered less than significant when considering there are no population centers within the boundaries of the MOAs, and all exercise aircraft would remain at least 3 nautical miles from Baker if flying below 3,000 ft AGL. The noise impacts from implementing the Proposed Action are considered less than significant.

4.5.2 Alternative 1

Alternative 1 proposes to change the boundaries and use of the Silver MOA. The proposed changes to the numbers and types of aircraft participating in future combat training activities within the Silver MOA are explained in Section 4.2, Airspace.

The primary human noise receptor within the project area is the town of Baker. Aircraft flying within the Silver North MOA are prohibited from flying lower than 3,000 ft AGL within 3 nautical miles of the center of Baker.

Alternative 1 also proposes to create new special use airspace connecting the current Silver MOA to the Barstow MOA. The altitude ceiling of this new airspace would be 10,000 ft MSL. Aircraft transitioning between the two MOAs would most likely be flying at the upper altitude level of the MOA. The noise impacts on any human or biological resources in this new area would be less than those currently imposed in the current Silver MOA. Though only 1-5 percent of Air Warrior aircraft would be transitioning between the two MOAs, for the purpose of the noise analysis, we assumed a homogenous distribution of the 3,000 sorties throughout the study area.

Analysis. The analysis for Alternative 1 was done assuming a uniform distribution of sound throughout the entire airspace. Under this alternative the estimated L_{dn} was computed to be 53.1 dB. The noise impacts as a result of selecting Alternative 1 are considered less than significant considering that all exercise aircraft would remain at least 3 nautical miles from Baker if flying below 3,000 ft AGL. The noise impacts from implementing the Alternative 1 are considered less than significant.

4.5.3 No Action Alternative

Under the No Action Alternative, no changes would occur to existing noise levels. The estimated L_{dn} was computed to be 55.6 dB. There would be no additional noise impacts as a result of selecting this alternative.

4.6 Safety

The proposed action is an airspace initiative; therefore, no ground safety impacts were explored or analyzed unless they had impacts on airspace changes. The criteria in this section are any unmitigated negative impacts in air safety that rise to the level of significant.

4.6.1 Proposed Action

Under the Proposed Action, military aircraft using the Silver North and South MOAs would have the additional maneuver space they require to reduce/eliminate unauthorized spill-outs into the NAS. The changes in this alternative would give military

aircraft an additional 2,000 feet vertically and eliminate boundary spill-outs incurred when transitioning between the Silver South and Barstow MOAs.

Under the Proposed Action, the special use airspace southeast of I-15 would be returned to the NAS. Commercial and/or general aviation traffic flying on V21, V283, and V587 would be able to use these VFR airways without possible interaction with military aircraft operating within the same airspace—this would have a positive impact on air safety. Commercial and/or general aviation traffic flying VFR on V394 within the boundaries of the Silver North MOA would need to increase their altitude 2,000 feet to above 9,000 ft MSL to be free of interacting with military aircraft operating within the same airspace; commercial and/or general aviation aircraft operating below 9,000 ft MSL would need to use the same procedures currently used when flying through the MOA. This change would reduce the flexibility of non-participating aircraft but wouldn't increase the negative safety factors. However, on this leg of V394, VFR aircraft must fly at or above 12,000 ft MSL to be at or above the MEA, and at or above 9,500 ft MSL to be at or above the MOCA (USDOT 2003b).

Nellis AFB maintains BASH data for the aircraft operating out of Nellis AFB. Records indicate that approximately 80 percent of reported BASH incidents have no specific location indicated. Most BASH incidents were detected on post-flight aircraft inspections. For those incidents without specific locations indicated, pilots could only verify that the incident occurred sometime after takeoff and before landing. A records search for the past 5 years revealed no BASH incidents within the Silver MOA (Bass 2004). As most Air Warrior aircraft that would operate in the Silver North MOA and the aircraft transiting through the Silver South MOA would be at the upper limits of the MOAs (9,000 ft MSL and 7,000 ft MSL respectively), the probability of bird strikes would diminish. The safety impacts as a result of selecting the Proposed Action are considered less than significant.

4.6.2 Alternative 1

Under Alternative 1, military aircraft using the new Silver MOA would have the additional maneuver space they require to reduce/eliminate unauthorized spill-outs into the NAS. The changes in this alternative would give military aircraft an additional 3,000 feet vertically, and eliminate boundary spill-outs incurred when transitioning between the Silver and Barstow MOAs.

Under this alternative, commercial and/or general aviation traffic flying on V21, V283, V394, and V587 would need to increase their altitude 3,000 feet to above 10,000 ft MSL to be free of interacting with military aircraft operating within the same airspace; commercial and/or general aviation aircraft operating below 10,000 ft MSL would need to use the same procedures currently used when flying through the MOA. This change would reduce the flexibility of non-participating aircraft but wouldn't increase the negative safety factors. However, on this leg of V394, VFR aircraft must fly at or above 12,000 ft MSL to be at or above the MEA, and at or above 9,500 ft MSL to be at or above the MOCA; VFR aircraft on these legs of V587, V283, and V21 must fly at or above 10,000 ft MSL to be at or above the MEA (USDOT 2003b).

Nellis AFB maintains BASH data for the aircraft operating out of Nellis AFB. Records indicate that approximately 80 percent of reported BASH incidents have no specific location indicated. Most BASH incidents were detected on post-flight aircraft

inspections. For those incidents without specific locations indicated, pilots could only verify that the incident occurred sometime after takeoff and before landing. A records search for the past 5 years revealed no BASH incidents within the Silver MOA (Bass 2004). As most Air Warrior aircraft that would operate in the new Silver MOA would be at the upper limits of the MOAs (10,000 ft MSL), the probability of bird strikes would diminish. The safety impacts as a result of selecting Alternative 1 are considered less than significant.

4.6.3 No Action Alternative

Under the No Action Alternative, no changes would occur to the existing Silver MOA airspace and therefore, there would be no additional impacts to safety as a result of selecting this alternative. However, even though there would be no additional safety impacts to this alternative, the current USAF operational flight safety deficiencies described in Paragraph 3.5.3 would continue.

4.7 Socioeconomics

4.7.1 Proposed Action

Visual Flight Rules Traffic

The impacts the Proposed Action would impose on non-military air traffic would be both positive and negative (Figure 4.2-2). The positive impacts would result from returning special use airspace to the southeast I-15 to the NAS. Military Operations Areas are joint use airspace, which allow non-military aircraft to use the airspace on a see-and-avoid basis; however, most general aviation, VFR pilots purposely avoid flying within MOAs. By releasing the southeast portion of the Silver MOA to the NAS, general aviation pilots flying on V587, V283, and V21 could use this airspace more freely. By being able to fly on V587, V283, and V21 rather than choosing to fly around or over the MOA airspace, VFR pilots could realize some level of fuel savings.

The negative impact imposed by the Proposed Action would be the reduction of VFR airspace above the Silver North MOA. This airspace would decrease by 2,000 feet (current VFR airspace over the Silver MOA is between 7,000 ft MSL, to but not including 18,000 ft MSL; new VFR airspace over the Silver North MOA would be between 9,001 ft MSL, to but not including 18,000 ft MSL). Visual Flight Rules traffic flying on V394 would need to fly above 9,000 ft MSL if they chose to avoid the MOA airspace. Climbing and maintaining an additional 2,000 feet would use a small additional amount of fuel. The socioeconomic impacts that the Proposed Action would impose on VFR commercial and general aviation traffic are considered to be less than significant.

Instrument Flight Rules Traffic

Air traffic flying IFR normally cruise above 18,000 ft MSL (FL180) (Figure 4.2-3). The changes considered under the Proposed Action are below 9,000 ft MSL; therefore, this alternative would impose no socioeconomic impacts on IFR commercial and/or general aviation traffic flying above 18,000 ft MSL (FL180).

4.7.2 Alternative 1

Visual Flight Rules Traffic

Alternative 1 would reduce the VFR airspace above the new Silver MOA by 3,000 feet (current VFR airspace over the Silver MOA is between 7,000 ft MSL, to but not including 18,000 ft MSL; new VFR airspace over the Silver MOA would be between 10,001 ft MSL, to but not including 18,000 ft MSL) (Figure 4.2-5). Air traffic flying VFR on V587, V394 V283, and V21 would need to fly an additional 3,000 feet higher (above 10,000 ft MSL) if they chose to fly over the MOA airspace. Climbing and maintaining an additional 3,000 feet would use a small additional amount of fuel. Flying around the MOA would not cause any additional use of fuel than currently expended. The socioeconomic impacts that Alternative 1 would impose on VFR commercial and/or general aviation traffic are considered less than significant.

Instrument Flight Rules Traffic

Air traffic flying IFR normally cruise above 18,000 ft MSL (FL180) (Figure 4.2-6). The changes considered under Alternative 1 are below 10,000 ft MSL; therefore, this alternative would impose no impacts on IFR commercial and/or general aviation traffic flying above 18,000 ft MSL (FL180).

4.7.3 No Action Alternative

Under the No Action Alternative, no changes would occur to the existing Silver MOA airspace and therefore, there would be no additional adverse impacts to socioeconomic features as a result of selecting this alternative.

4.8 Native American Concerns

Air Force regulations require that Nellis AFB consider and analyze the effects of airspace changes on Native American undertakings on historic properties. Air Force representatives consulted with the Coordinator of the Nellis AFB Native American Program on 21 December 2004 to identify and evaluate cultural resource issues (the Coordinator was elected by tribal representatives from 17 tribes with ancestral ties to the Nevada Test and Training Range, and other lands within a 250-mile radius of Arizona, California, Nevada, and Utah). It was determined that the changes to the airspace designations proposed in the Proposed Action and Alternative 1 would not alter the status quo. No further consultation is required (Myhrer 2004).

5. Cumulative Impacts

5.1 Definition

The CEQ regulation for implementing NEPA defines cumulative impacts as:

“ . . . the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR §§ 1500-1508).”

Therefore, a cumulative impact analysis is based on a series of assumptions concerning future plans and/or projects and information about their character and timing. Cumulative impacts are examined by combining the effects of the proposed action alternatives with the effects of other past, present, and reasonably foreseeable activities within the ROI.

5.2 Reasonable Foreseeable Future Actions

United States Army

The NTC at Fort Irwin is currently preparing a *Supplemental Draft Environmental Impact Statement (SDEIS) for Proposed Addition of Maneuver Training Land at Fort Irwin, CA* (NTC 2004). This initiative also includes expanding Restricted Area airspace to overlay the proposed expansion of maneuver training land.

This initiative includes five action alternatives and a no action alternative. Consistent with all action alternatives is converting a small portion of the current Shoshone and Silver MOAs adjacent to R-2502E to Restricted Airspace. This action, if approved, will slightly decrease the size of the Silver MOA but will have no impact on this airspace change initiative.

United State Air Force

The USAF at Nellis AFB is also preparing an *Environmental Assessment for Target Upgrades on Leach Lake Tactical Range at the National Training Center, Fort Irwin, California*. The purpose of the proposed action is to provide target upgrades to better support U.S. and allied air and ground forces during advanced combat training conducted at the National Training Center (NTC), Fort Irwin, California and to re-build the boundary fence at the north entrance of the range required to delineate the Army boundary from areas that public can access.

5.3 Impacts

There are no negative direct, indirect, or cumulative impacts on air quality, airspace, biological resources, environmental justice, noise, safety, or socioeconomics as a result of implementing these three initiatives. There are no other past, present, or reasonably foreseeable airspace actions in this geographical area to which this project would add to any cumulative impacts.

6. Other Required Considerations

6.1 *Irreversible and Irretrievable Commitment of Resources*

Irreversible commitments of resources are those resources that cannot be reversed or are lost for an extremely long period of time. Irretrievable commitments of resources are those that are lost for a short period of time (usually for the time period for which the resources are used) and that would be restored over time.

Airspace actions can be reversed, changed, or terminated; therefore, the proposed airspace actions described in this proposal do not constitute either an irreversible or irretrievable commitment of resources.

7. List of Preparers

- | | |
|-----------------|---|
| Charlton, David | <i>Biological Resources; Threatened, Endangered, and Sensitive Species; Charis Corporation</i> <ul style="list-style-type: none">• B.S., Plant Sciences/Biology, California Polytechnic State University-Pomona, 1974• M.S., Ornamental Horticulture/Botany, California Polytechnic State University-San Louse Obispo, 1980• Years of Experience – 30 |
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8. Persons and Agencies Contacted

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Vojkufka, Connie; Baker and Barstow-Daggett Airports Manager, Apple Valley, CA.

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10. Glossary of Terms

Above Ground Level (AGL). The altitude expressed in feet measured above the earth's surface.

Above Mean Sea Level (MSL). The altitude expressed in feet measured above average sea level.

Air Combat Command (ACC). Air Combat Command is the Air Force command that operates combat aircraft assigned to bases within the contiguous 48 states, except those assigned to the Air National guard and the Air Force Reserve Command. Its headquarters is located at Langley AFB, Virginia.

Air Force Instruction (AFI). An AFI is an Air Force directive that sets goals, assigns responsibilities, and provides guidance and procedures to the Air Force, Air National Guard, Air Force Reserves, major commands, and other subordinate activities to meet standards at all Air Force installations.

Air Route Traffic Control Center (ARTCC). A facility established to provide air traffic control services to pilots operating on Instrument Flight Rules flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to pilots flying under Visual Flight Rules.

Air Traffic Control (ATC). A service operated by appropriate authority (FAA and the military) to promote the safe, orderly, and expeditious flow of air traffic.

Air Traffic Control Assigned Airspace (ATCAA). ATCAA is airspace, often overlying a MOA, extending from 18,000 feet (FL180) AMSL to an altitude assigned by the FAA. ATCAAs are released to military users by the FAA only for time they are to be used, allowing maximum access to the airspace by civilian aviation.

Air Warrior. The 549th Combat Training Squadron (CTS), in concert with Detachment 2, USAF Air-Ground Operations School (AGOS), based at Fort Irwin, California, develops, executes, and directs Air Combat Command's Air Warrior exercises. Air Warrior trains USAF ground combat units in the tactical control of airpower in the close battle. U.S. Army brigade commanders and their combat forces deployed to National Training Center receive the support and integrate the airpower presented by the 549 CTS.

Air-to-Air Training. Air-to-air training prepares aircrews to achieve and maintain air superiority over the battlefield and defeat enemy aircraft. Air-to-air training often includes some aircraft playing the role of adversaries, or enemy forces. Air-to-air training activities include advanced handling characteristics, air combat training, low-altitude air-to-air training, and air intercept training. This training also requires the use of defensive countermeasures.

Air-to-Ground Training. Air-to-ground training employs all the techniques and maneuvers associate with weapons use and includes low- and high-altitude tactics, navigation, formation flying, target acquisition, and defensive reaction. Training activities include surface attack tactics, different modes of weapons delivery, electronic combat training, and use of defensive countermeasures.

Airway. A Class E airspace area established in the form a transportation corridor—much like a highway does for automobiles—the centerline of which is defined by radio navigation aids. Low altitude airways (commonly called Victor airways) extend up to, but not including, 18,000 feet above mean sea level. High altitude airways (commonly called jet routes) begin at 18,000 feet above mean sea level (FL180) up to 45,000 feet above mean sea level (FL450).

A-Weighted Sound Level (L_{max}). The sound pressure level that is measured using the A-weighting filter network. This noise measurement scale closely resembles the frequency response of human hearing.

Class A Airspace. Generally, that airspace from 18,000 feet (FL180) above mean sea level up to and including 60,000 feet (FL600) above mean sea level, including the airspace overlying the waters within 12 nautical miles for the coast of the 48 contiguous States and Alaska. Unless otherwise authorized, all pilots must operate their aircraft under Instrument Flight Rules.

Class B Airspace. Generally, that airspace from the surface to 10,000 feet above mean sea level surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspace areas resemble upside-down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An Air Traffic Control clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for Visual Flight Rules operations is "clear of clouds."

Class C Airspace. Generally, that airspace from the surface to 4,000 feet above the airport elevation surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of Instrument Flight Rule operations or passenger enplanements. Although the configuration of each Class C area is individually tailored, the airspace usually consists of a surface area with a 5-nautical mile radius, an outer circle with a 10-nautical mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation and an outer area. Each pilot must establish two-way radio communications with the Air Traffic control facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace. Visual Flight Rules aircraft are only separated from Instrument Flight Rules aircraft within the airspace.

Class D Airspace. Generally, that airspace from the surface to 2,500 feet above the airport elevation surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures. Arrival extensions for instrument approach procedures may be Class D or Class E airspace. Unless otherwise authorized, each pilot must establish two-way radio communications with the Air Traffic Control facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace. No separation services are provided to pilots flying under Visual Flight Rules.

Class E Airspace. Generally, if the airspace is not Class A, B, C, or D, and it is controlled airspace, it is Class E airspace. Class E airspace extends upward from either

the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Also in the class are Federal airways, airspace beginning at either 700 or 1,200 feet above ground level used to transition to/from the terminal or en route environment, en route domestic, and offshore airspace areas designated below 18,000 feet (FL180) above mean sea level. Unless designated at the lower altitude, Class E airspace begins at 14,500 feet above mean sea level over the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska, up to, but not including 18,000 feet above mean sea level, and the airspace above 60,000 feet (FL600) above mean sea level.

Commercial Aviation. Aviation operations that are in business to generate revenue (e.g., air carrier, air taxi, and commuter flights) that hold a certificate of public convenience and necessity from the Civil Aeronautics Board, and large aircraft commercial operations.

Controlled Airspace. An airspace of defined dimensions within which air traffic control service is provided to pilots flying under Instrument Flight Rules and Visual Flight Rules in accordance with the airspace classification. Controlled airspace is classified as Class A, B, C, D, and E.

Controlling Agency. The FAA facility that authorizes transit through or flight within a restricted area or other special use airspace in accordance with a joint use letter of procedure. The FAA Air Traffic Control facility that exercises control of the airspace when a special use airspace area is not activated. A military Air Traffic Control facility may be assigned as the controlling agency, subject to the concurrence of the regional Air Traffic Division and the concerned Air Route Traffic Control Center.

Daggett Shelf. The Daggett Shelf is an unofficial term used to describe the airspace made up of the Barstow East Air Traffic Control Assigned Airspace, R-2502 East, and the portion of R-2508 that overlies R-2502 East at 24,000 feet (FL240) AMSL and above.

Day-Night Sound Average Level (L_{dn}). A mathematical long-term average of composite noise levels and durations of individual noise events. It is computed over a specific period of time, commonly a year, to represent the total noise exposure. Because noise is more intrusive at night than during the day, sounds that occur after 10 P.M. and before 7 A.M. are adjusted by a 10-dB penalty.

Decibel (dB). A unit used to express relative difference in intensity usually between two acoustic sounds equal to 10 times the common logarithm of the ratio of the two levels.

Exercise. A military maneuver or simulated wartime operation involving planning, preparation, and execution. It is carried out for the purpose of training and evaluation. It may be a combined, joint, or single-Service exercise, depending on participating organizations.

Fiscal Year (FY). A fiscal year begins on October 1st. The year is measured between October 1st and September 30th.

Flight Level (FL). Flight level is an aeronautical term for depicting altitude above 18,000 feet above mean sea level. When combined with the number of feet, the last two digits

are removed (i.e., 24,000 feet is depicted at FL240). When expressed verbally, each number is pronounced individually (i.e., “flight level, two, four, zero”).

General Aviation. General Aviation is that portion of civil aviation that encompasses all facets of aviation except air carriers holding a certificate of public convenience and necessity from the Civil Aeronautics Board and large aircraft commercial operations. This includes private, corporate/business, and non-scheduled (on-demand) commercial aircraft.

High Desert Terminal Radar Approach Control (TRACON). The High Desert TRACON is a FAA Air Traffic Control Facility and the controlling agency of the R-2508 Complex. It is responsible to provide traffic advisory service and boundary calls (to the extent possible) to all aircraft operating within the R-2508 Complex, and providing Air Traffic Control services to non-participating aircraft transiting the R-2508 Complex with respect to known activities on a non-interference basis.

Instrument Flight Rules (IFR). A standard set of rules that all pilots, both civilian and military, must follow when operating under flight conditions that are more stringent than Visual Flight Rules. These conditions include operating an aircraft in clouds, operating above certain altitudes prescribed by FAA regulations, and operating in some locations like major civilian airports. Air traffic control agencies ensure separation of all aircraft operating under IFR. See Visual Flight Rules.

Instrument Route (IR). Routes used by military aircraft for conducting low-altitude, high-speed navigation, and tactical training under both Instrument and Visual Flight Rules.

Irretrievable. An irretrievable use of resources is defined as short-lived and its effects normally last only as long as the intended activity occurs. Resource use opportunities are foregone for the period of time that the intended activity is being conducted. These decisions are reversible, but resource utilization opportunities foregone are irretrievable.

Irreversible. An irreversible use of resources is defined as the loss of future options. It applies primarily to non-renewable resources such as minerals, cultural resources, or elimination of a threatened or endangered species. For all intents and purposes, an irreversible use of resources precludes any other unrelated action to use those resources even after the intended activity ceases.

Jet Routes. A route designated to serve aircraft operations from 18,000 feet (FL180) above mean sea level up to 45,000 feet (FL450) above mean sea level. The routes are referred to as “J” routes with numbering to identify the designated route (i.e., J105).

Joint Force. A general term applied to a force composed of significant elements, assigned or attached, of two or more Military Departments, operating under a single joint force commander.

Knot. One knot equals one nautical mile per hour.

Longitude/Latitude. A geographical grid reference system used for referencing positions on the earth. Longitude is the angular distance (measured in degrees and minutes) east or west of the Greenwich meridian. Latitude is the angular distance (measured in degrees and minutes) north or south of the equator.

Low-Altitude Navigation. This type of navigation is an activity that aircrews use to find their way to and from a target while flying at low altitudes. Aircrews develop these skills on military training routes and in military operations areas.

Maneuver. A maneuver is defined as 1) a movement to place ships or aircraft in a position of advantage over the enemy; 2) a tactical exercise carried out at sea, in the air, on the ground, or on a map in imitation of war; 3) the operation of a ship, aircraft, or vehicle to cause it to perform desired movement; and/or 4) employment of forces on the battlefield through movement of combat forces in relation to the enemy, supported by fire or fires potential from all sources, to gain potential advantage from which to destroy or threaten destruction of the enemy to accomplish the mission.

Military Operations Area (MOA). A MOA is one of the six types of special use airspace. A MOA is airspace designated outside of Class A airspace, to separate or segregate certain non-hazardous military activities from IFR traffic and to identify to VFR traffic where these activities are conducted.

Military Training Route (MTR). A military training route is a corridor of airspace with defined vertical and lateral dimensions established for conducting military low-altitude flight training at airspeeds in excess of 250 knots. Instrument flight rules MTRs are mutually developed by the FAA and the DOD. Visual flight rules MTRs are developed by the military. MTRs are published on aeronautical charts. Each MTR has its own unique number consisting of either three or four digits. Three digits indicate that at least one segment of the route is 1,500 feet above ground level; four digits indicate that the entire route is at or below 1,500 feet above ground level. The number is preceded by either IR (instrument flight rule route) or VR (visual flight rule route).

Minimum Enroute Altitude (MEA). The lowest published altitude between radio fixes which assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes. The MEA prescribed for a Federal airway or segment thereof, area navigational low or high route, or other direct route applies to the entire width of the airway, segment, or route between the radio fixes defining the airway, segment, or route.

Minimum Obstruction Clearance Altitude. The lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments which meets obstacle clearance requirements for the entire route segment and which assures acceptable navigational signal coverage only within 22 nautical miles of a VOR navigation station.

Nautical Mile. A unit of distance used in air navigation. It is the mean distance of one minute of longitude on the equator. One nautical mile is equal to 6,080 feet; it equals approximately 1.15 statute miles.

Notice to Airmen (NOTAM). A notice containing information concerning the establishment, condition, or change in any aeronautical facility, service, procedures, or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

R-2508 Complex Control Board (CCB). The CCB was established by joint agreement, July of 1956. Its mission is to supervise the management of the R-2508 Complex. The

CCB assists the Joint Policy Planning Board (JPPB) commanders (general/flag officers from the USAF Flight Test Center (Edwards AFB), the National Training Center (Fort Irwin), and the Naval Air Warfare Center (China Lake) by formulating advice and assistance in conducting JPPB matters. The CCB relieves the JPPB of the day-to-day business such as developing procedures for shared use airspace, resolving procedural conflicts, and real-time decision-making. The CCB consists of one senior representative for each commander who is intimately familiar with his/her organization's mission and policies.

Resource Operations Center. The Resource Operations Center is located at Edwards AFB, California. It schedules and deconflicts airspace, aircraft, telemetry, and resources associated with flight-testing at Edwards AFB and adjacent airspaces.

Restricted Area. A restricted area is one of the six types of special use airspace. Restricted areas are established when determined necessary to confine or segregate activities considered hazardous to nonparticipating aircraft.

See and Avoid. When weather conditions permit, pilots operating under instrument and visual flight rules are required to observe and maneuver to avoid other aircraft.

Sortie. A sortie is a single flight, by one aircraft, from takeoff to landing.

Sound Exposure Level (SEL). An A-weighted single event, noise metric that normalizes the duration of the noise event to one second.

Special Use Airspace. Special use airspace is airspace of defined dimensions wherein activities must be confined because of their nature, or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. The six types of special use airspace are: Prohibited Areas, Restricted Areas, Military Operations Areas, Warning Areas, Alert Areas, and Controlled Firing Areas.

Spill-Outs. Spill-outs occur when military aircraft inadvertently leave special use airspace (in altitude or exceeding a lateral boundary) and intrude on the National Airspace System without authorization.

Tactical Air Navigation (TACAN). Ground sited, navigational aid equipment consisting of either a fixed or mobile transmitting unit. The airborne unit, in conjunction with the ground unit, reduces the transmitted signal to a visual presentation of both azimuth and distance information. TACAN is a pulse system and operates in the Ultrahigh Frequency (UHF) band of frequencies.

Terminal Radar Approach Control (TRACON). A terminal Air Traffic Control facility that provides approach control service for arriving and departing Visual Flight Rule and Instrument Flight Rule aircraft, and on occasion en route aircraft, in a terminal area.

Terrain Avoidance (TA). The use of radar or visual cues to fly a consistent clearance above the terrain at very low altitudes. Successful terrain avoidance will utilize terrain masking and minimize aircraft exposure to enemy threats when flying over mountainous terrain.

Terrain Following (TF). Aircrews use an electronic systems to maintain the lowest possible altitude above the ground while following a straight flight path. The system maintains a relative constant altitude above the ground by climbing and descending over terrain features. Navigation is easier, but the aircraft may be exposed to threats when climbing over high terrain. Aircrews plan their flight route to minimize the degree and length of this exposure.

Uncontrolled Airspace. All airspace that is not classified as controlled airspace. Uncontrolled airspace is classified at Class G airspace.

Using Agency. The using agency is the military unit or other organization whose activity established the requirement for the special use airspace. The using agency is responsible for ensuring that the airspace is used only for its designated purpose; proper scheduling procedures are established and utilized; the controlling agency is kept informed of changes in scheduled activity, to include the completion of activities for the day; and a point of contact is made available to enable the controlling agency to verify schedules, and coordinate access for emergencies, weather diversions, etc.

Utility Corridor D. The designation for the electrical and natural gas utility corridor that runs northeast to southwest, parallel to the NTC's southeastern boarder, operated by the Los Angeles Department of Water and Power.

Very High Frequency Omni-directional Range (VOR). A ground-based electronic navigation aid transmitting very high frequency (VHF) navigation signals, 360 degrees in azimuth, oriented from magnetic north. used as the basis for navigation in the National Airspace System. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.

Very High Frequency Omni-Directional Range/Tactical Air Navigation (VORTAC). A VORTAC is a ground-based electronic navigation aid transmitter facility consisting of two components—a VOR transmitter and a TACAN transmitter/transponder—that provides three individual services: VOR azimuth, TACAN azimuth, and TACAN distance measuring equipment at one site. See Very High Frequency Omni-directional Range (VOR) and Tactical Air Navigation (TACAN).

Victor Airways. A term used to describe the VOR Airway System. The system consists of airways designated from 1,200 feet above the surface (or in some instances higher) up to but not including 18,000 feet above mean sea level. These airways are depicted on En Route Low Altitude Charts. The VOR airways are predicated solely on VOR or VORTAC navigation aids.

Visual Flight Rules (VFR). Visual Flight Rules govern the procedures for conducting flight under visual conditions. The term "VFR" is also used in the United States to indicate weather conditions that are equal to or greater than VFR requirements. When weather conditions are good enough to allow pilots to safely operate their aircraft without the control requirements of instrument flight rules flight procedures, and weather minimum conditions are above the regulatory requirements for VFR flight, pilots may operate under VFR procedures. See Instrument Flight Rules.

Visual Route (VR). Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude and tactical training under

Visual Flight Rules below 10,000 feet above mean sea level, at airspeeds in excess of 250 knots indicated airspeed.

11. Appendix – Consultation Letters

[Appendix A – Federal Aviation Administration](#)

[Appendix B – California Department of Fish and Game](#)

[Appendix C – U.S. Fish and Wildlife Service](#)